

AS/400e



# AS/400e server 170, 250, 6xx, 7xx, and Sxx System Installation and Upgrade

*Version 4*



AS/400e



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*Version 4*

**Note**

Before using this information and the product it supports, be sure to read the information in “Safety and Environmental Notices” on page v and “Appendix E. Notices” on page 371.

**Sixth Edition (May 2000)**

This edition replaces SY44-5950-04. This edition applies only to reduced instruction set computer (RISC) systems.

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# Safety and Environmental Notices

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## Danger Notices

A danger notice calls attention to a situation that is potentially lethal or extremely hazardous to people.

The following danger notices are contained in this guide:

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

### DANGER

Dangerous voltage being measured. (RSFTD005)

### DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)

### DANGER

To prevent a possible electrical shock when installing the system, ensure that the power cords for all devices are unplugged before installing signal cables. (RSFTD202)

### DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

## DANGER

To prevent power from switching on automatically during service procedures, set the keylock switch on the system unit control panel to the Manual or Secure position. (RSFTD206)

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## Caution Notices

A caution notice calls attention to a situation that is potentially hazardous to people because of some existing condition.

The following caution notices are contained in this guide:

### CAUTION:

These instructions describe how to install a rack stabilizer to the bottom front of each rack to prevent the rack from falling over when you slide or pull out the system units. Do not attempt to slide out or install any system units until the stabilizer is correctly installed. Use caution when moving the rack and its system units. (RSFTC063)

### CAUTION:

If the system is on a raised floor, be careful around the holes in the floor. (RSFTC065)

### CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

### CAUTION:

Do not reconnect the mainline ac power cable until instructed to do so. (RSFTC213)

### CAUTION:

Telecommunications Statement: This unit contains over-voltage circuits between the ac power outlet and the unit. These circuits meet the standard limits described in International Electrical Commission (IEC) 664, installation category II. It is the customer's responsibility to ensure that the power outlet meets the standards of IEC 664, installation category II. (RSFTC214)

### CAUTION:

Ensure that all rack-mounted units are fastened in the rack frame. Do not extend or exchange any rack-mounted units when the stabilizer is not installed. (RSFTC222)

### CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

**CAUTION:**

The optical link card contains a laser. To avoid the release of toxic substances into the environment, do not burn. Discard the optical link as instructed by local regulations. (RSFTC236)

## **Laser Safety Information**

**CAUTION:**

This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)

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## **Product Recycling and Disposal**

Components of the system, such as structural parts and circuit cards, can be recycled where recycling facilities exist. IBM does not currently collect and recycle used IBM products from customers in the United States other than those products that are involved in trade-in programs. Companies are available to disassemble, reutilize, recycle, or dispose of electronic products. Contact an IBM account representative for more information.

The system unit contains batteries and circuit boards with lead solder. Before you dispose of this unit, these batteries and circuit boards must be removed and discarded according to local regulations or recycled where facilities exist. This book contains specific information on each battery type where applicable.

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## **Battery Return Program**

In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used IBM batteries and battery packs. For information on proper disposal of the batteries in this unit, please contact IBM at 1-800-426-4333. Please have the IBM part number that is listed on the battery available when you make your call. For information on battery disposal outside the United States, contact your local waste disposal facility.

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## **Environmental Design**

The environmental efforts that have gone into the design of the system signify IBM's commitment to improve the quality of its products and processes. Some of these accomplishments include the elimination of the use of Class I ozone-depleting chemicals in the manufacturing process, reductions in manufacturing wastes, and increased product energy efficiency. For more information, contact an IBM account representative.



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## Chapter 1. Using this Guide and the Printed Instructions

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### What is in this Guide

This guide provides help for initial installation instructions and for upgrade instructions for the AS/400 Advanced Series Models 170, 250, 7xx, 6xx and SB1. Initial installation instructions and upgrade instructions are printed at the IBM plant.

The sections in this guide are:

- Chapter 1. Using this Guide and the Printed Instructions
- Chapter 2. Help  
This section contains detailed information about how to perform each initial installation or upgrade instruction. Take a minute and look at the Help section of this guide (it starts in "Chapter 2. Help" on page 5.) Then, return here.
- Chapter 3. Relocating a System  
This appendix contains instructions for moving a system from one location and installing it later at another location.
- Appendix B. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes  
This appendix contains a table of feature and specify codes with minimal Operating System/400 level requirement and code description.
- Appendix C, AS/400 Model 170, 250, 6xx, 7xx, and SB1 Systems  
This appendix gives the configuration rules for the 170, 250, 7xx, 6xx and SB1 models and features.
- Appendix D. Index of HELP Sections  
This appendix gives a list of the Help information sections, arranged sequentially or by the function that is performed.

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### What is in the Printed Instructions

The first pages of the printed instructions contain information about:

- What the instructions are for (initial installation or upgrade)
- A summary of the changes to be made (if the printout is for an upgrade)
- Special instructions, if any
- The time needed to complete the job
- Any special tools needed
- Other information

The remaining pages of the printed instructions contain the specific information you need to install or upgrade a system.

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## How To Use the Printed Instructions with this Guide

The installation or upgrade activity is divided into small units of work; each unit of work is a **task**. A task can include one or more instructions. Here is an example.

2. \_\_\_\_

Verify the contents of the ship group match the System Content List including hardware and documentation (system reference material, etc.)

Verify the system serial number using the System Content List.

HELP: 940x Models 170, 250, 7xx, 6xx, and SB1 Installation and Upgrade    A034  
(BSHIP1)

Example:

Abbreviations:    IU - Models 170, 250, 7xx, 6xx, and SB1 Installation and Upgrade.  
                      PARP - Problem Analysis, Repair, and Parts for this model.

The leftmost column gives the step number and a place for you to mark when you complete the task.

The text following is the instruction. It specifies *what* action to take.

The word HELP specifies a reference that informs you where you can find more information in this guide about *how* to do that task. If you need help with a task, look in the Help section of this guide and follow the detailed information provided for you to complete the task.

The coded name for each task will be in each step, refer to this name if you call your support center for assistance. Note the following:

- The help information sections are in numeric sequence.
- At the end of the help section for each task is a sentence, "*Return to the printed instructions or to the page that sent you here.*"

It is very important that you:

- Do not skip any information in the printed instructions.
- Mark each task when it is complete.

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## Becoming Familiar with the AS/400 Hardware Organization

If you are not familiar with this system, you should read the following help sections before continuing:

Help	Section Title
A015	"How to work with logic cards"
A016	"How to handle optical cables"
A033	"How to check the customer-supplied power source."
A034	"How to verify that your system has the system number specified"
A036	"How to verify customer preparation"
A240	"How to verify that initial program load (IPL) is complete after a system hardware installation or hardware upgrade"
A321	How to connect the console to a twinaxial workstation attachment"
A322	"How to prepare and connect the ASCII console"

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## Other Manuals You May Need

You should have all the information you need to complete an installation or upgrade by using only the printed instructions and this guide. For some exception conditions, you may be instructed to see one of the following manuals for additional information.

- The physical planning guide (at <http://www.as400.ibm.com/tstudio/planning/plngstrt.htm> or on the Information Center CD).
- *AS/400 Service Functions*, SY44-5902-03
- *System Operation*, SC41-4203-00
- *Basic System Operation, Administration, and Problem Handling*, SC41-5206-04
- *9404/9406 Models 5xx Problem Analysis and Repair and Parts*, SY44-5951-01
- *AS/400e server 600, 620, 720, S10, and S20 Problem Analysis, Repair and Parts*, SY44-5955-05
- *AS/400e series 640, 650, 730, 740, S30, S40, and SB1 Problem Analysis, Repair and Parts*, SY44-5956-05
- *AS/400e 940x RISC-to-RISC Road Map*, SA41-5155-04
- *Backup and Recovery*, SC41-5304-04

**Note:** Reference information for customers when working with auxiliary storage protection concurrent with hardware installation and hardware upgrades.

- *AS/400 Road Map for Changing to PowerPC Technology*, SA41-5150-05.

For information about other AS/400 publications, see the *AS/400 Information Directory*, a unique, multimedia interface to searchable database containing descriptions of titles available from IBM or from selected other publications.

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## Information Available on the World Wide Web

More AS/400 information is available on the World Wide Web. You can access this information from the AS/400 home page, which is at the following uniform resource locator (URL) address:

<http://www.as400.ibm.com>



## Chapter 2. Help

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**Note:** The information in this section is for reference only. You are meant to use it with the printed instructions. Do not attempt to perform an installation or upgrade using only this help information. You must have, and follow, the printed instructions.

Tasks on the printed instructions may have a number **Axxx** in a HELP reference.

Example:

HELP: 940x Models 170, 250, 7xx, 6xx, and SB1 Installation and Upgrade A034 (BSHIP1)

Example:

Abbreviations: IU - Models 170, 250, 7xx, 6xx, and SB1 Installation and Upgrade.  
PARP - Problem Analysis, Repair, and Parts for this model.

This HELP reference points to specific help information in this section of this guide. Look for those help numbers in the **upper outside corner** of each page in this section.

Note the following:

- The help information units are in numeric sequence within each topic division.
- A sentence indicates the end of the help information for each task by informing you where you should return.

*Return to the printed instructions or to the page that sent you here.*

- Some Help sections contain System Reference Codes (SRCs). If it is not clear what action to take, refer to the *AS/400e server 170 and 250 Problem Analysis, Repair and Parts*, *AS/400e server 600, 620, 720, S10, and S20 Problem Analysis, Repair and Parts*, or *AS/400e series 640, 650, 730, 740, S30, S40, and SB1 Problem Analysis, Repair and Parts*.

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## Basic Information

### A000: Laser Safety Information

This system may contain a laser product that is called the IBM Optical Link Module (OLM). The IBM OLM product is certified by IBM as a Class I laser product. This product conforms to the requirements that are contained in the Department of Health and Human Services regulation 21 CFR Subchapter J. Internationally, the OLM product is certified by IBM as a Class 1 laser product. The OLM conforms to the requirements that are contained in the International Electrotechnical Commission (IEC) standard 825-1 (1993). The OLM conforms to the requirements that are contained in CENELEC (European Committee for Electrotechnical Standardization) European Norm standard EN60825-1 (1994). The OLM conforms to the requirements that are contained in Verband Deutscher Elektrotechniker (VDE) standard 0837 (1986).

The German testing institute VDE assigned the IBM OLM a certificate of conformity to DIN IEC 825/VDE 0837/02.86 and CENELEC HD 482 S1/03.88. The certificate registration number is either 3642 or 3886; that is determined by the manufacturing site. In addition, Statens Provningsanstalt (Swedish National Testing Institute) tested and approved the OLM for use in Sweden as Class 1 laser products. Statens Provningsanstalt assigned the approval number SP LA 89:184.

The OLM product incorporates laser diodes that are one of two types. The gallium aluminum arsenide (GaAlAs) type emits in the wavelength range of 770 to 800 nanometers. The indium gallium arsenide phosphide (InGaAsP) type emits in the wavelength range of 1270 to 1355 nanometers. The OLM product incorporates discrete laser diodes that are Class 3B laser products with a rating of about 5.0 milliwatts peak power. Once the lasers are assembled into the OLM, the automatic laser control safety system prevents laser emissions from exceeding Class 1 limits during both operation and service. There are no user maintenance operations or adjustments you need to perform on IBM OLM products. Class 1 laser products are not considered to be hazardous under any conditions.

IBM designed and certified IBM OLM products for use in applications with point-to-point optical links only. Use of these products with multiple input or multiple output links (star couplers or fiber splitters) is not compatible with the OLM design and function. In addition, the IBM OLM products must only be connected to another IBM OLM (of the same model) or a compatible laser product that contains the open fiber link detection and laser control safety system used within the IBM OLM. These are requirements for correct operation of the IBM OLM in any optical fiber communication system. Failure to follow these restrictions may result in the system not operating correctly and create points of access that emit laser radiation above the Class 1 limit specified by IEC 825-1 (1993). (RSFTC211)

*Return to the printed instructions or to the page that sent you here.*

### A001: CD-ROM Laser Safety Information

This product may contain a CD-ROM which is a Class 1 laser product. (RSFTC240)

*Return to the printed instructions or to the page that sent you here.*

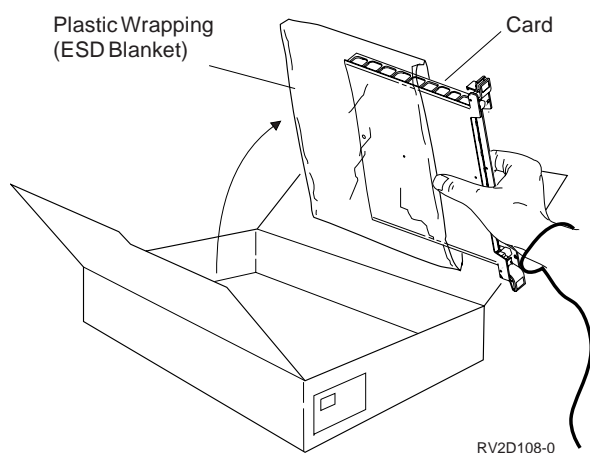
## A015: How to work with logic cards

The cards that are used in this system are sensitive to electrostatic discharge.

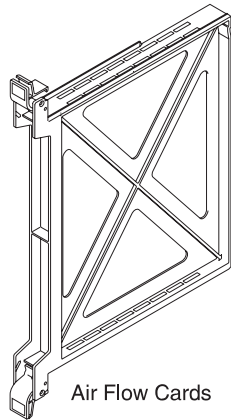
When holding or installing cards, use the electrostatic discharge kit, IBM part 6428316 or similar. Read and follow the instructions inside the top cover of the carrying case.

Use care when unpacking or working with the cards.

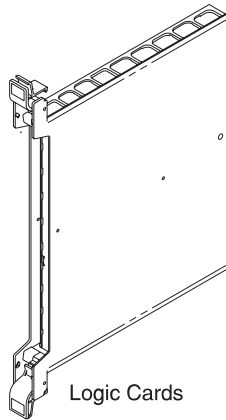
- The plastic wrapping in which cards are shipped is an electrostatic discharge blanket. When you must put down cards, insert them in this electrostatic discharge blanket before putting them down, if possible.



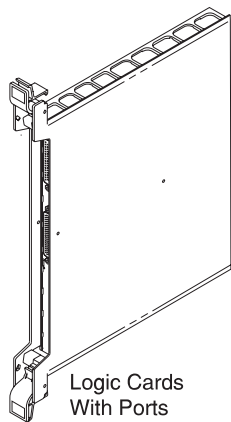
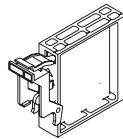
There are several types of cards. The following figure shows examples of those you most often work with.



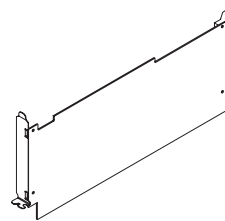
Air Flow Cards



Logic Cards

Logic Cards  
With Ports

Adapter Cards



PCI Cards

RV4D197-0

- **Air flow cards** have no logic circuits. They control air flow in the card enclosure.
- **Logic cards** contain logic, memory, voltage regulators, or disk units. Some of them take 2 slots. Some of them accept the adapter cards.
- **Logic cards with ports** contain logic circuits and ports for attaching cables.
- **Adapter cards (IOA)** contain logic circuits and ports for attaching cables. They are fastened to the larger logic cards.
- **PCI cards** contain logic circuits and ports. These install into PCI card slots.

Specific tasks later in these instructions show how to remove, install, and move these cards. In those tasks, **it is very important that you follow the steps exactly as they are given.**

*Return to the printed instructions or to the page that sent you here.*

## A025: Frame Placement and Frame to Frame Power Sequence Cabling

The following abbreviations are in this help section:

Abbreviation	Meaning
B/M	Bill of material.
FC	Feature code.

<b>IPL</b>	Initial program load.
<b>MT</b>	Machine type.
<b>PCC</b>	Power control compartment. Found inside the rear of a rack, on the left side. In racks the device power cords plug into outlets in this PCC.
<b>FFPS</b>	Frame to frame power sequence.
<b>SC</b>	Specify code.
<b>SPCN</b>	System power control network.
<b>SU</b>	System unit. This is always the primary frame. Frame 01.
<b>SUE</b>	System unit expansion. This unit provides slots to plug in cards for additional buses.

### Models 170, 7xx, 6xx, and SB1 Frame types

- System Unit
- I/O Expansion Unit
- Bus Extension Unit
- Storage Unit
- SPCN/Non-SPCN Racks
  - Expansion Racks or Extension Racks
  - General Purpose Racks.

**Racks:** The easiest way to tell if a rack has SPCN is to look at the back of the rack. SPCN racks will have connectors labeled J15 and J16.

**FFPS string types:** Models 7xx, 6xx and SB1 can have a mixture of expansion units and SPCN/Non-SP racks. All frames serially connect to one or two SPCN FFPS strings. Non-SPCN frames serially connect together in a Non-SPCN FFPS string, and that string connects to one SPCN frame. There can be more than one Non-SPCN FFPS string.

**Frame placement:** The available cable lengths limit the distance between frame groups (all cable types must be considered, not just FFPS cables).

Figure 1 on page 11 is an example of a system that contains both SPCN and Non-SPCN frames. An SPCN FFPS string (starting from socket J15 in frame 01), A SPCN FFPS Rack string (starting from socket J16 in frame 03), and one Non-SPCN FFPS rack string are used. The Non-SPCN racks should be placed by the SU, SUE, and BEU frame that contains the IOP or IOPs that drive the devices in the Non-SPCN frames.

Figure 1 on page 11 is an example of a system that contains both SPCN and Non-SPCN frames. An SPCN FFPS 6xx or SB1 string (starting from socket J15 in frame 01), A SPCN FFPS Rack string (starting from socket J16 in frame 03), and one Non-SPCN FFPS rack string are used. The Non-SPCN racks should be placed by the SU, SUE, and BEU frame that contains the IOP or IOPs that drive the devices in the Non-SPCN frames.

The figure shows three frame groups (the 6xx group, SB1 group, and the Rack group). They can be arranged next to each other or separated (you must consider all cables, not just the FFPS cables).

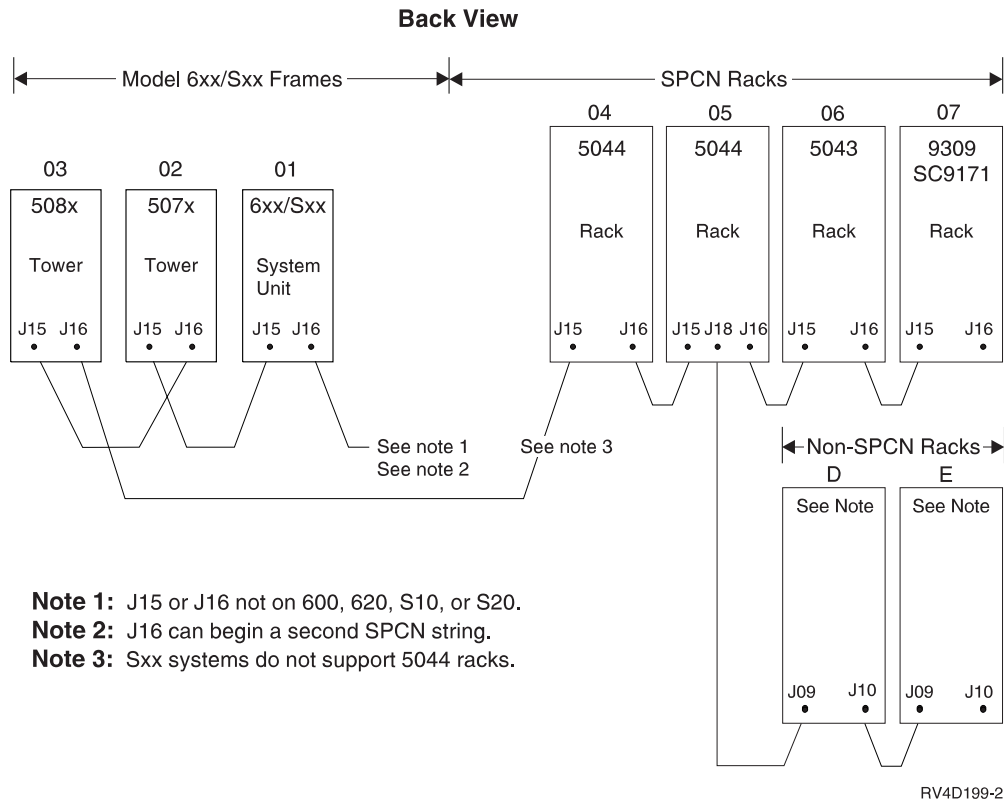


Figure 1. Model 6xx/SB1 System with combination of SPCN and Non-SPCN Frames

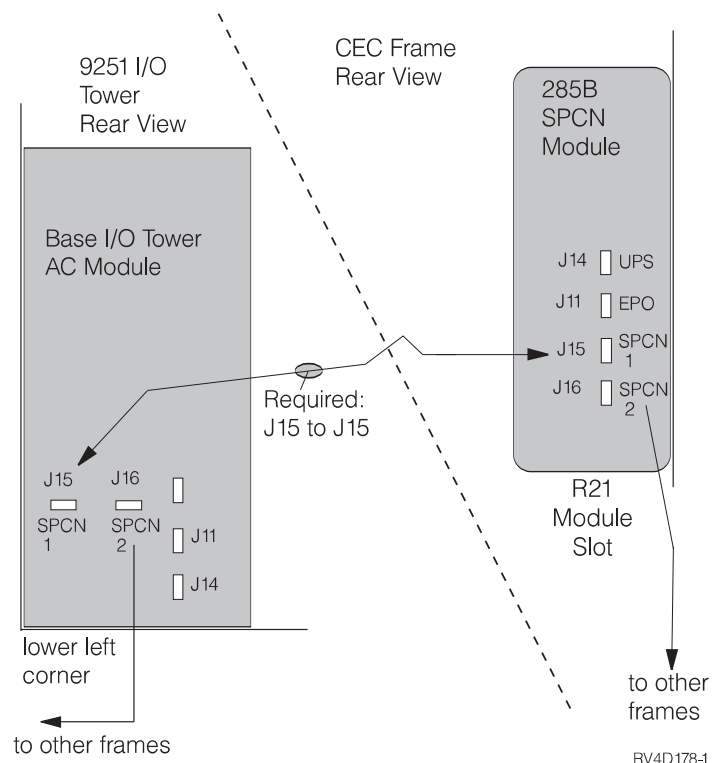


Figure 2. Model 650/S40/SBx SPCN Cabling - Base I/O Unit to CEC

*FFPS Cabling Rules:* Follow the recommended FFPS cabling patterns if at all possible. The printed instructions will provide information for connecting the cables.

If that is not possible, you can use the following rules to determine how to connect the FFPS cables correctly.

- SPCN frames

These rules apply to Models 7xx, 6xx and SB1 System Units, Exon Units, and Racks (FC 504Xs, MT.9309 SC.9171, and MT.9309 SC.9177 racks).

- Conditions

1. The primary SPCN frame (frame 01) has two SPCN FFPS output sockets, J15, and J16.
2. Each secondary SPCN frame has one SPCN FFPS input socket, J15, and one SPCN FFPS output socket, J16.
3. There are no SPCN FFPS terminating plugs.

- Rules

1. There can be up to two SPCN FFPS strings on a system.
2. Each SPCN FFPS string starts with the primary frame.
3. The frames in an SPCN FFPS string are connected in a serial network, with the FFPS cables being connected from J16 (output) of one frame to J15 (input) of the next frame. **THE ONE EXCEPTION TO THIS PATTERN IS THE J15 CONNECTOR in the primary frame. J15 in the primary frame is always an output socket. It would be connected to J15 of the first secondary frame on that string.**
4. Optical SPCN FFPS cables are available as an RPQ. If an optical SPCN FFPS cable is used, each end must attach to one of the following:
  - System Unit (SU)
  - I/O Expansion Unit
  - Storage Unit
5. FFPS cables that attach to an SPCN frame other than an SU, SUE, or BEU must be copper.
6. 349x Models will not connect into the SPCN FFPS string.

**Note:** If no cable plugs into J18, plug the Non-SPCN FFPS terminating plug there. (This is not required for correct operation; it is just a convenient place to keep the terminating plug.)

- Non-SPCN Racks

The Non-SPCN racks are MT.9309 with specify codes of SC.9127, SC.9128, SC.9129, SC.9130, SC.9141, and SC.9277. These racks are SC9141 when migrated.

- Conditions

1. Each SPCN rack has a Non-SPCN FFPS input socket (J17), and a Non-SPCN FFPS output socket (J18). **J17 is never used.**
2. Each Non-SPCN rack has a Non-SPCN FFPS input socket (J09), and a Non-SPCN FFPS output socket (J10).

- Rules

1. A Non-SPCN rack must have J09 connected to:
  - J18 of any SPCN Rack, or
  - J10 of another Non-SPCN rack
2. A Non-SPCN rack must have J10:

- connected to J09 of another Non-SPCN rack, or
  - contain a Non-SPCN FFPS terminating plug.
3. There can be multiple Non-SPCN FFPS strings on a system.
  4. The maximum number of Non-SPCN FFPS strings on a system is equal to the smaller of:
    - The number of SPCN racks in the system, or
    - The number of Non-SPCN FFPS terminating plugs available.
  5. A Non-SPCN FFPS string of racks should be connected to the SPCN frame that contains the IOP or IOPs that drive the devices in the Non-SPCN frames.
  6. 349x Models will not connect to the Non-SPCN FFPS string.

**Note:** If no cable is plugged into J18, plug the Non-SPCN FFPS terminating plug there. (This is not required for correct operation; it is just a convenient place to keep the terminating plug.)

*Return to the printed instructions or to the page that sent you here.*

## A105: Configuring a local or remote console and the remote control panel

### How to Manually Configure the Controller and Device for the Client Access/400 Console

**Note:** This instruction assumes that there are no additional display devices (TWINAX or ASCII) available to do a manual configuration for the Client Access console. In order to get all the necessary information needed to do this configuration, you must perform 2 IPL's.

**Note:** Client Access console is not supported on V4R5 operating systems.

In order to manually configure the Controller and Device for the Client Access console, you need to know the following information:

1. The type of AS/400 Communications Adapter that you are plugging the Client Access console into.

The type of communications adapter used determines the type of Controller created. For the 2612 Adapter, the controller type will be a 6A58.

2. The type of device that the PC 5250 Emulation software is emulating.

The following shows what type of devices the PC 5250 Emulation software emulates:

Screen Size	Character Set	Emulated 5250 Device
24x80	SBCS	3179 Model 02
DBCS	5555 Model C01	
27x132	SBCS	3477 Model FC

Create the Work Station Controller and device description for the Client Access console by performing the following steps:

1. IPL the system the 1st time to allow the system to properly assign resources used for the Client Access console. Once the 1st IPL is complete, an SRC

A9002000 will appear that says the system cannot vary on the console. This is to be expected, since no devices or controllers have been created for the console.

2. At this time, IPL the system. On the next IPL, continue with the following steps:
3. At the IPL options screen, change the Define or change system at IPL to a Y (Yes).
4. On the next screen, choose Configuration commands (1)
5. On the next screen, choose Controller description commands (2)
6. On the next screen, choose Display Controller Description (1)
7. View the QCTL description, and remember the resource associated with that Controller.
8. Create a Local Work Station Controller (35)  
Use the following to enter the information in the prompted fields:
  - Name (provide it a controller name that is not already defined on the AS/400)
  - Controller type = 6A58 or 6A59, based on AS/400 Communication Adapter type
  - Controller Model = 1
  - Controller Resource = the same resource listed in QCTL controller description.
  - Online at IPL = \*YES
  - Text description = Client Access console Controller
9. Next, work with Device Description Commands from Configuration Commands Menu
10. On the next screen, Create a Device description (34)  
Provide the following information for the prompted fields:
  - A device description (Name)
  - Device Class = \*LCL
  - Device Type (based on list of devices above)
  - Device Model (based on list of devices above)
  - Port Number = 0
  - Switch Setting = 0
  - Online at IPL = \*YES
  - Attached Controller = (Name of Controller previously created for Client Access console)
  - Text = Client Access console device

Exit out of the configuration screens, and continue with the IPL

For more information regarding both automatic and manual configuration, see the Local Device Configuration book, SC41-3121.

## Installing Enhanced 3.1 or Windows 95/NT PC5250 Console Support

### Installing Enhanced 3.1 or Windows 95/NT PC5250 Console Support

**DANGER**

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)

The following instructs you on how to start your personal computer (PC) that is using AS/400 Client Access. This is the PC that you will be using as your system unit console.

- \_\_\_ 1. Plug the PC power cord into an electrical outlet or an uninterruptible power supply.

**Attention:**

Do not plug in or power on your AS/400 system unit at this time.

- \_\_\_ 2. Power on the PC.
- \_\_\_ 3. Use the following table to find the console emulator that you are installing and then go to the installation instruction for that console emulator.

Console Emulator	PC5250
Windows** 95/NT	Go to "Windows 95/NT PC5250 Console Installation".
Enhanced Windows 3.1	Go to "Enhanced Windows 3.1 PC5250 Console Installation" on page 17.

**Windows 95/NT PC5250 Console Installation:** It is recommended that if you are using the PC5250 Async Console support that you have a minimum of a Pentium based PC with 32MB of memory. It is also recommended that you limit the PC applications that run concurrently on the same PC as Async Console to avoid performance and stability problems with your system console.

Before you can configure a console session, the base AS/400 Client Access licensed program must be installed on your personal computer (PC), including Base Support and PC5250.

To begin the installation process:

- \_\_\_ 1. Find the CD-ROMs for installing the console (PC) emulator and insert it into the appropriate drive.

The "AS/400 Client Access for Windows Family" or "AS/400 Operations Navigator" CD-ROMs contains the AS/400 Client Access PC5250 emulator for Windows 95/NT.

There are other media you could use; for example, diskettes or a network (LAN) drive. For information on these other media, go to the *Client Access for Windows 95/NT - Setup*, SC41-3512-05, book.
- \_\_\_ 2. Did the PC begin to read the information and automatically start the setup program?
  - No      Yes
  - ↓      Go to step 6 on page 16.
- \_\_\_ 3. Click on **Start**.
- \_\_\_ 4. Click on **Run**.

## Windows 95/NT PC5250 PC or Workstation

- \_\_\_ 5. Enter: **d:\setup** (where **d** is the CD-ROM drive letter)  
The Setup window appears after a few seconds.  
To continue with the setup program, select **Next**.
- \_\_\_ 6. The wizard prompts you to choose the type of installation that you want.  
Follow the instructions on the display.
- \_\_\_ 7. On the Type of Installation window, the installation wizard prompts you to choose the type of installation that you want. Select **Typical** if you are not sure of the type of installation that you want.
- \_\_\_ 8. Follow the instructions on the windows that are presented to you until the setup is complete. For more information on installing, go to the *Client Access for Windows 95/NT - Setup* book.
- \_\_\_ 9. To begin the configuration of a PC5250 session:
  - \_\_\_ a. Open the **IBM AS/400 Client Access** folder.
    - \_\_\_ 1) **Start**
    - \_\_\_ 2) **Programs**
    - \_\_\_ 3) **IBM AS/400 Client Access**
    - \_\_\_ 4) **Accessories**
    - \_\_\_ 5) **Start or Configure Session**. Click on **OK**.
  - \_\_\_ b. At this point, because no AS/400 connections are already established, the PC will prompt you to connect to an AS/400 session. Click on the **No** button to continue the configuration process that you have already started. The AS/400 will be started at a later time.
  - \_\_\_ c. Select the **Async Console** for the type of emulation.
  - \_\_\_ d. Select the **Display Size** that you want.
  - \_\_\_ e. Select the **Host code page** that you want. Default is English.
  - \_\_\_ f. Select the **port** for the console cable. The port must match the communications port where the cable is attached to the PC.
  - \_\_\_ g. Choose **OK**. The configuration is complete.
  - \_\_\_ h. When the 5250 session is established, **do not close it**.

### Notes:

- 1) Your connection to the AS/400 system does not become active until you power up the AS/400 system in a later step. You **may** see a lightning bolt icon displayed on the PC display until the connection is made later in the installation process.
  - 2) When you exit the emulator, you will be prompted to save the console profile. Name the file *AS400.WS*. When asked the question, "Do you want an icon?", answer **YES**. Add the icon to your desktop folder.
  - 3) **Additional Versions of PC5250:**  
Client Access includes versions of PC5250 for Korean, Simplified Chinese, and Traditional Chinese. Only one version of the PC5250 emulator can be installed on your personal computer at one time. If you have the Standard version already installed, you need to uninstall it before installing any other version.  
The correct version of your language should be installed automatically.
- \_\_\_ 10. **This ends the procedure.**

**Enhanced Windows 3.1 PC5250 Console Installation:** Before you can configure a console session, installation diskettes must be created. You need six blank formatted diskettes. Create installation diskettes from CD-ROM by doing the following:

- \_\_\_ 1. Find the CD-ROMs for installing the console (PC) emulator and insert it into the appropriate drive.  
The "AS/400 Client Access for Windows Family" CD-ROM contains the AS/400 Client Access PC5250 emulator for Enhanced Windows 3.1.  
There are other media you could use; for example, diskettes or a network (LAN) drive. For information on these other media, go to the *Client Access Enhanced for Windows 3.1 - Setup*, SC41-5534-00, book.
- \_\_\_ 2. Insert the Client Access Family for Windows CD-ROM (XW1) or the Client Access Family CD-ROM (XY1) in the CD-ROM drive.
- \_\_\_ 3. Double click on the MS DOS prompt icon in the MAIN program group.
- \_\_\_ 4. Change the prompt to the drive letter for the CD-ROM drive.
- \_\_\_ 5. Type MAKE52CW.BAT and press ENTER.
- \_\_\_ 6. Follow the prompts for labeling, removing, and inserting diskettes.
- \_\_\_ 7. At the end of the process, you will see the message, "Diskette created successfully". Remove diskette 6 from the diskette drive on your PC. If you have Personal Communications 4.1 or above installed on your personal computer, you will not be allowed to install the PC5250 session as part of Client Access.

**Note:** If you need more information on creating installation diskettes for the PC5250 console, go to the *Client Access Enhanced for Windows 3.1 - Setup*, book.

To begin the installation process:

- \_\_\_ 1. Insert the first installation diskette into the personal computer (PC).  
  
**Note:** If you have Personal Communications 4.1 or above installed on your personal computer, you will not be allowed to install the PC5250 session as part of Client Access.
- \_\_\_ 2. Ensure that Windows is started. (If you are at the DOS prompt, type **WIN**.)
- \_\_\_ 3. Choose **Run** from the **File** menu.
- \_\_\_ 4. Type **A:\INSTALL**  
Insert the six diskettes as prompted. Use the defaults on the installation windows.
- \_\_\_ 5. When the installation program is complete, click the **Exit** button to close the installation program.
- \_\_\_ 6. Open the **Start/Configure Session** icon in the Personal Communications group to configure PC5250 for Client Access console support.
- \_\_\_ 7. On the Customize Communication window, select **SNA-over-ASync (Console)** as the link type.
- \_\_\_ 8. Click the **Configure** button. The Customize Communication — 5250 Host window appears.
- \_\_\_ 9. Click the **Configure Link** button next to the **Link Parameters** option. The SNA-over-Async Attachment (Console) window appears.
- \_\_\_ 10. Select the correct communications port number (the port where the console cable is attached). If you are not sure, follow the defaults.
- \_\_\_ 11. Select **OK**.

## Enhanced Windows 3.1 PC5250 PC

- \_\_\_ 12. Select **OK**.
- \_\_\_ 13. Select **OK**.
- \_\_\_ 14. When the 5250 session is established, **do not close it**.

### Notes:

- a. Your connection to the AS/400 system does not become active until you power up the AS/400 system in a later step. You **may** see a lightning bolt icon displayed on the PC display until the connection is made later in the installation process.
- b. When you exit the emulator, you will be prompted to save the console profile.
- c. For more information about how to use the console emulator, see the console emulator online help or the installation book for the AS/400 Client Access client that you are installing.

### Windows 3.1 on 386\*\* Personal Computers

Users running Windows 3.1 on 80386-based personal computers can optimize their systems for the Client Access console by adding the following statements to the [386Enh] section of the Windows 3.1 SYSTEM.INI file:

```
WinExclusive=1*  
COMMBostTime=4  
Com1AutoAssign=0**  
Com1Base=0**  
Com1IRQ=4**
```

### See Notes Below:

- \* This statement is required for 80386-based personal computers running at a central processing unit (CPU) speed of less than 20 MHz. The statement should be reset to 0 when the Client Access console is not used.
- \*\* If the Client Access console is not using port 1 (Com1) for communications, change the statements to show the correct port number. For example, if port 2 is used for the console connection, change Com1 to Com2 and correct IRQ (for example, Com1IRQ = 4 Com2IRQ = 3).

- \_\_\_ 15. This ends the procedure.

## Installing Windows 95 or Windows NT Operations Console Support

### Prerequisite and related information:

**Note:** Any references to Windows 95 are valid for Windows 98 also.

- Operations Console System requirements for Local Controlling Systems (LCS):
  - Operating System
    - The AS/400 operating system must be at V4R3 level.
    - If used as a stand alone LCS, the operating system can be either Windows 95 or Windows NT Workstation 4.0 or later with “Remote Access to the Network” installed in the Network Folder.

## Installing Windows 95 or Windows NT Operations Console Support

- If used as a Local Controlling System (LCS) to support a Remote Controlling System (RCS), the operating system must be Windows NT Workstation 4.0 or later with "Remote Access to the Network" installed in the Network Folder.

### Notes:

1. For Windows NT, you can check for "Remote Access to the Network" by doing the following:
  - \_\_\_ a. Click on **Start**.
  - \_\_\_ b. Click on **Settings**.
  - \_\_\_ c. Click on **Control Panel**.
  - \_\_\_ d. Click on **Network**.

If you can open the Network Folder, you have met network requirements. Click on **Cancel**.

If you cannot open the Network Folder, you do not have "Remote Access to the Network" installed. Select **Yes** to install.

2. For Windows 95, you can check the network requirements by doing the following:
  - \_\_\_ a. Click on **Start**.
  - \_\_\_ b. Click on **Settings**.
  - \_\_\_ c. Click on **Control Panel**.
  - \_\_\_ d. Click on **Network**.
  - \_\_\_ e. Is TCP/IP listed?

<b>No</b>	<b>Yes</b>
↓	You have satisfied the network requirements.
  - \_\_\_ f. Click on **Add**.
  - \_\_\_ g. Select **Protocol**.
  - \_\_\_ h. Click on **Add**.
  - \_\_\_ i. Select **Microsoft** listed under "Manufacturers".
  - \_\_\_ j. Select **TCP/IP** listed under "Network Protocols".
  - \_\_\_ k. Click on **OK** twice.
  - \_\_\_ l. Select **Yes** to restart the PC.
3. Window 95 requires Dial Up Networking (DUN). To verify the level of DUN on your system, do the following
  - \_\_\_ a. Click on **Start**
  - \_\_\_ b. Click on **Settings**
  - \_\_\_ c. Click on **Control Panel**
  - \_\_\_ d. Click on **System**Take note of the version number listed.
  - \_\_\_ e. Click on **Cancel**.
  - \_\_\_ f. Click on **Add/Remove Programs**
  - \_\_\_ g. Click on **Cancel**.

- RS-232 Cable
- SAMI Cable
- 9600 baud modem minimum, if the LCS will receive calls from an RCS or this workstation will be an LCS and an RCS.
- 1 available communications (COM) port for console

## Installing Windows 95 or Windows NT Operations Console Support

- 1 available communications (COM) port for control panel

**Note:** If you are using either COM3 or COM4, be sure that the addresses and the IRQ settings do not conflict with other hardware resources.

The following instructs you on how to start your personal computer (PC) that is using AS/400 Client Access. This is the PC that you will be using as your system unit console.

### Notes:

1. Go to the *Client Access for Windows 95/NT - Setup*, SC41-3512-05, book, to setup:
  - A Remote Controlling System (RCS)
  - Adding dial-in support to a Local Controlling System (LCS)
  - Changes to your Operations Console configuration
2. When referring to a “standard” modem, it means a normal switched-line point-to-point asynchronous modem. When referring to a “null” modem, it means the modem the Operations Console setup creates, using the name *AS/400 Operations Console Connection*.
3. Windows NT requires *Remote Access to the Network* support.

### DANGER

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

Operations Console is supported on a Windows 95 or Windows NT PC or workstation (not 3.1).

- 1. Plug the PC power cord into an electrical outlet or an uninterruptible power supply.

#### Attention:

Do not plug in or power on your AS/400 system unit at this time.

- 2. Power on the PC.
- 3. To begin the installation process:
  - a. Find the CD-ROMs for installing the console (PC) emulator and insert it into the appropriate drive.

The **V3R2M0** “AS/400 Client Access for Windows Family” or “AS/400 Operations Navigator” CD-ROMs contain the AS/400 Operations Console support for Windows 95/NT.

There are other media you could use; for example, diskettes or a network (LAN) drive. For information on these other media, go to the *Client Access for Windows 95/NT - Setup*, SC41-3512-05, book.
  - b. Did the PC begin to read the information and automatically start the setup program?

**No      Yes**

↓      Go to step 8 on page 21.

- 4. Click on **Start**.
- 5. Click on **Run**
- 6. Enter: **d:\setup (where d is the CD-ROM drive letter)**

The Setup window appears after a few seconds.

## Installing Windows 95 or Windows NT Operations Console Support

To continue with the setup program, select **Next**.

- \_\_\_ 7. Follow the instructions on the windows.
- \_\_\_ 8. The wizard prompts you to choose the type of installation that you want. Follow the instructions on the display. Select **Custom**.
- \_\_\_ 9. On the Component Selection window, ensure at minimum that the following components are selected:
  - Base Support
  - 5250 Display and Printer Emulator

**Note:** You need a 5250 emulator. It can either be the 5250 Display and Printer Emulator or IBM Personal Communications V4.1 or later.

Check (✓) AS/400 Operations Console. Click on **Next**.

- \_\_\_ 10. Follow the instructions on the windows that are presented to you until the setup is complete. For more information on installing, go to the *Client Access for Windows 95/NT - Setup* book.

Click **Yes or Finish**, if prompted to restart.

- \_\_\_ 11. Are you using the Windows 95 platform?

**Yes      No**

- ↓ You are using the Windows NT platform. Go to "Installing Windows NT Console Support" on page 26.

Go to "Installing Windows 95 Console Support".

## Installing Windows 95 Console Support

- \_\_\_ 1. Click on the following:

- \_\_\_ a. **Start**
- \_\_\_ b. **Settings**
- \_\_\_ c. **Control Panel**
- \_\_\_ d. **System**

Write down the number located below *Microsoft Windows 95*. For example, 4.00.950 would be the base code as shipped on the original Windows 95 CD. Your version may also have a letter after that number.

Click on **Cancel**.

- \_\_\_ 2. Click on **Add/Remove Programs**.
- \_\_\_ 3. Is your version 4.00.950 or 4.00.950a?

**Yes      No**

- ↓ Do the following:
  - a. Click on **Windows Setup**.
  - b. Click on **Communications**.
  - c. Click on **Details**.

Is Dial Up Networking installed?

**Yes      No**

- ↓ Click on the check box to select Dial Up Networking. Then do the following:
  - \_\_\_ a. Click on **OK**.

## Windows 95 Console Support

- \_\_\_ b. Click on **Apply**.
- \_\_\_ c. Click on **OK** to restart.

When the system is back at the desk top, do the following:

- \_\_\_ a. Click on **Start**.
- \_\_\_ b. Click on **Settings**.
- \_\_\_ c. Click on **Control**.
- \_\_\_ d. Go to step 5.

Click on **Cancel** twice. Go to step 5.

- \_\_\_ 4. Is Microsoft Dial-Up Networking (DUN) Upgrade 1.2 listed?

**Yes**      **No**

- ↓      Click on **Cancel** and then close the **Control Panel** folder. Follow the online help text to download and install DUN 1.2. To get to the help text, open **AS/400 Operations Console**. Click on **Help**. Select *Help Topics*. Select *Obtaining and Installing Dial-Up Networking 1.2*. When the installation is complete, return to step 1 on page 21 and follow the steps. Return to step 1 on page 21.

Click on **Cancel**.

- \_\_\_ 5. Open the Modems icon, to verify your modem connection.
- \_\_\_ 6. Did the *Install New Modem* display appear?

**No**      **Yes**

- ↓      Go to step 9.

**Note:** Since Windows 95 does not support dial-in connections from remote PCs (RCSs), there is no need for a regular modem. If one is configured and you will not be using it for any other purpose, it can be removed now.

- \_\_\_ 7. Is there an entry *AS/400 Operations Console Connection*?

**No**      **Yes**

- ↓      Click on **OK**. Go to "Windows 95 Local Controlling System (LCS)" on page 23.

- \_\_\_ 8. Click on **Add**.

- \_\_\_ 9. To install a null modem, do the following:

- \_\_\_ a. Check the box *Don't detect my modem; I will select it from a list..* Click on **Next**.
- \_\_\_ b. Click on **Have disk**.
- \_\_\_ c. Click on **Browse**.
- \_\_\_ d. If "Locate File" dialog message appears indicating **A:\ is not accessible**, click on **Cancel**.
- \_\_\_ e. In the "Drives" section, select the drive where you installed Client Access.
- \_\_\_ f. In the "Folders" section, open the folder that Client Access was installed into. The default was "Program Files", then "IBM", then "Client Access".
- \_\_\_ g. Double-click on **Aoc**.
- \_\_\_ h. Double-click on **Inf**

- \_\_\_ i. Click on **OK** or **Open**.
- \_\_\_ j. Click on **OK**.

The AS/400 Operations Console Connection should be shown.

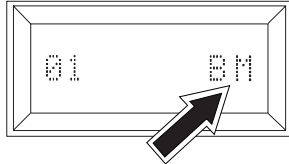
- \_\_\_ k. Click on **Next**.
- \_\_\_ l. Select the communications port that you installed the Console cable into (for example, Com1).
- \_\_\_ m. Click on **Next**.
- \_\_\_ n. Click on **Next**.

**Note:** The first time a modem is configured on a PC, a display will appear asking you for your telephone area code or country code and any numbers necessary to access an outside line. If you get this display, add the information, then click on **Next** to exit that online display and continue with the next step.

- \_\_\_ o. Click on **Finish**.
- \_\_\_ p. Click on **Properties**. Set Maximum speed to 115200. Click on **OK**.
- \_\_\_ q. Click on **Close** or **OK**.
- \_\_\_ r. Go to "Windows 95 Local Controlling System (LCS)".

### Windows 95 Local Controlling System (LCS)

- \_\_\_ 1. Plug the system unit power cord into an electrical outlet or an uninterruptible power supply, if not already plugged in.
- \_\_\_ 2. Look at the Function/Data display on the control panel.
  - \_\_\_ a. Does a **B M** appear in the Function/Data display?



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**No      Yes**

↓ Go to step 2g on page 24.

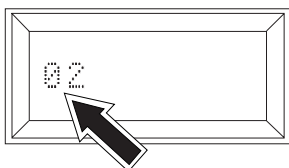
- \_\_\_ b. Is the Function/Data display lit?

**Yes      No**

↓ Before calling your hardware service representative, do the following:

- Confirm that the electrical outlet is functioning by plugging in a lamp or other simple device.
- Ensure that the power cord is securely plugged into the system unit and electrical outlet.

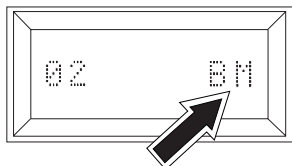
- \_\_\_ c. Press the Up or Down select push button until **02** appears in the Function/Data display.



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## Windows 95 Local Controlling System (LCS)

- \_\_\_ d. Press the Enter push button on the control panel.
- \_\_\_ e. Press the Up or Down select push button until **B M** appears in the Function/Data display.



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- \_\_\_ f. Press the Enter push button on the control panel.
- \_\_\_ g. Press the Power push button that is located on the AS/400 control panel.

**Note:** The system takes approximately 5 to 10 minutes to power on and complete an IPL. You should see data changing in the Function/Data display.

- \_\_\_ h. Is reference code **B6004501** shown in the Function/Data display?

**No      Yes**

↓      Go to step 3.

- \_\_\_ i. Is the Attention light lit?

**Yes      No**

↓      If the system shows no activity for more than 10 minutes, go to the "Handling and Reporting System Problems" section of the *Basic System Operation, Administration, and Problem Handling*, SC41-5206-04, which was shipped with your system. Then return here and continue.

- \_\_\_ j. Is a System Reference Code (SRC) **x6xx500x** (where the x is any letter or number), shown in the Function/Data display?

**Yes      No**

↓      Go to the "Handling and Reporting System Problems" section of the *Basic System Operation, Administration, and Problem Handling*, SC41-5206-04, which was shipped with your system. Then return here and continue.

### PC Setup

- \_\_\_ 3. Open the Operations Console icon.
  - \_\_\_ a. **Start**
  - \_\_\_ b. **Programs**
  - \_\_\_ c. **IBM AS/400 Client Access**
  - \_\_\_ d. **AS/400 Operations Console**
- \_\_\_ 4. Select **Local Controlling System (LCS) to AS/400 System**.
- \_\_\_ 5. Click on **Next**.
- \_\_\_ 6. Type the system name of the AS/400 you want to connect to.

**Note:** The system name is only a reference name and does not need to be the actual system name. For example, you could name the system ATLANTA, when the actual name is 10-12345.

Then, click on **Next**.

## Windows 95 Local Controlling System (LCS)

- \_\_\_ 7. Indicate which Operations Console actions you want to use with your AS/400 system. If you installed **part number 97H7555, 97H7556, or 97H7557 (Operations Console cable) and part number 97H7584 or 97H7591 (Remote Control Panel cable)**, you need to select both (*Remote Control Panel and Console*). Click on **Next**.
- \_\_\_ 8. Click on **Next** to allow the system to detect the console communications port. System should find the port and select it automatically. If not, manually select.

**Note:** If you chose **Console only** on the *Actions* display, you would not get any of the Remote Control Panel displays here.

- \_\_\_ 9. Click on **Next**, to allow the system to detect the Remote Control Panel communications port. System should find the port and select it automatically. If not, manually select.
- \_\_\_ 10. Click on **Next**.
- \_\_\_ 11. A *Success....* message appears. Click on **Finish**.
- \_\_\_ 12. When the installation completes, Operations Console will connect to the system automatically.
- \_\_\_ 13. Did you configure Operations Console with a Remote Control Panel?

**Yes      No**

↓      Go to step 15.

- \_\_\_ 14. Did the Remote Control Panel start when the setup was finished?

**Yes      No**

↓      Recheck the cables and Operations Console setup. Then return to step 13.

- \_\_\_ 15. Did the display *AS/400 DST Sign On* appear? (The display should appear within three minutes.)

**Yes      No**

↓      Recheck the cables and Operations Console setup. Then return to step 13.

Sign on using the system default values:

- In the *DST User ID* field, type **QSECOFR**.
- In the *DST Password* field, type **QSECOFR**.

Click on **OK**.

- \_\_\_ 16. Did the remote console start?

**No      Yes**

↓      You should see the IPL or Install the system menu. Select *Use Dedicated Service Tools (DST)*. Then go to step 17 on page 26.

Use the Remote Control Panel on the PC. If you don't have a Remote Control Panel on the PC, go to the Control Panel at the front of your AS/400 system unit.

**Note:** You are here because you are configuring Operations Console with a Remote Console, however, it failed to start.

Press the Up or Down select push button to select a 21 in the data window. Press the enter button.

## Windows 95 Local Controlling System (LCS)

- \_\_\_ 17. Did you get the display prompting you for a Dedicated Service Tools (DST) user id and password?  
**Yes      No**  
↓      Recheck the cables and Operations Console setup. Then return to step 16 on page 25.
- \_\_\_ 18. Sign on the DST display.  
In the *User* field, type **QSECOFR**.  
In the *Password* field, type **QSECOFR**.
- \_\_\_ 19. Select Work with DST environment.
- \_\_\_ 20. Select Work with system devices.
- \_\_\_ 21. Select Work with console mode.
- \_\_\_ 22. Select Operations Console.
- \_\_\_ 23. Press PF3.
- \_\_\_ 24. Select Start a service tool.
- \_\_\_ 25. Select System power down.
- \_\_\_ 26. Press PF10 to confirm the power down.
- \_\_\_ 27. Wait for the power light to turn off.
- \_\_\_ 28. **This ends the procedure.**

## Installing Windows NT Console Support

- \_\_\_ 1. To determine if you have Remote Access Service (RAS) installed, click on:  
\_\_\_ a. **Start**  
\_\_\_ b. **Settings**  
\_\_\_ c. **Control Panel**  
\_\_\_ d. **Modems**
- \_\_\_ 2. Did the Install New Modem window appear?  
**No      Yes**  
↓      Go to step 5.
- \_\_\_ 3. Is AS/400 Operations Console Connection listed?  
**No      Yes**  
↓      Click on **Cancel** or **Close**. Then go to step 7 on page 27.
- \_\_\_ 4. Click on **Add**.
- \_\_\_ 5. Checkoff the box *Don't detect my modem; I will select it from a list.....* Then click on **Next**.
  - \_\_\_ a. Click on **Have disk**.  
  
**Note:** If you know the full path to the null modem drivers, enter it here. Then go to step 5k on page 27 and click on **OK**.  
Otherwise, continue with step 5b.
  - \_\_\_ b. Click on **Browse**.  
  
**Note:** Microsoft expects the drivers to be on diskette and will automatically check the diskette drive on the PC. It is normal to expect a message that the drive is not ready.
  - \_\_\_ c. If *Locate File* message appears indicating **A:\** is not accessible, click on **Cancel**.

- \_\_\_ d. Click the down-arrow to the right of the "Desktop" in the *Look in* field. Then select the drive you installed Client Access to.
- \_\_\_ e. In the **Folders** section, select the folder that Client Access was installed into. The default was "Program Files", then "IBM", then "Client Access".
- \_\_\_ f. Double-click on **Client Access**.
- \_\_\_ g. Double-click **Aoc**.
- \_\_\_ h. Double-click on **inf**.
- \_\_\_ i. Click on **Open**.
- \_\_\_ j. Click on **OK**. The entry **AS/400 Operations Console Connection** should be shown.
- \_\_\_ k. Click on **Next**.
- \_\_\_ l. Select the communications port that you installed the console cable into. (For example, **Com1**).
- \_\_\_ m. Click on **Next**.

**Note:** The first time a modem is configured on a PC, a display will appear asking you for your telephone area code or country code and any numbers necessary to access an outside line. If you get this display, add the information, then click on **Next** to exit that online display and continue with the next step.

- \_\_\_ n. Click on **Finish**.
- \_\_\_ o. Click on **Properties**. Set Maximum speed to 115200. Click on **OK**.
- \_\_\_ 6. Click on **OK** or **Close**.
- \_\_\_ 7. Click on **Network**.

**Note:** It is assumed that *Remote Access to the Network* has been previously installed. If you get the message "Windows NT Networking is not installed", click on **Yes** to install this support. The minimum requirement for Operations Console is *Remote Access to the Network*.

At minimum, install *Remote Access to the Network* support, then click on **Next** when asked to choose the network adapter without selecting the adapter.

When the Add RAS Device window appears, continue with step 13 on page 28.

- \_\_\_ 8. Click on **Services**.
- \_\_\_ 9. Is Remote Access Service installed?

**Yes**      **No**

↓

To install **Remote Access Service**, do the following:

- \_\_\_ a. Put the Windows NT compact disc (CD) in the CD-ROM drive.
- \_\_\_ b. Close the "Windows NT CD-ROM" window when it appears.
- \_\_\_ c. Click on **Add**.
- \_\_\_ d. Select **Remote Access Service** and click on **OK**.
- \_\_\_ e. Set the path to the Windows NT files that are used as the source for this install. For example, D:\I386 where D is the drive letter of the CD-ROM or LAN drive. When Add RAS Device window appears, then go to step 13 on page 28.

## Windows NT Console Support

Select **Remote Access Service**.

- \_\_\_ 10. Click on **Properties**.
- \_\_\_ 11. Is AS/400 Operations Console Connection listed?

**No**      **Yes**

↓      Go to step 14.

Remove any devices listed for Com1. If you are installing the Remote Control Panel, remove any device on Com2.

- \_\_\_ 12. Click on **Add**.
- \_\_\_ 13. Select **AS/400 Operations Console Connection**. Then click on **OK**.
- \_\_\_ 14. You should be at the *Remote Access Setup* window.
  - \_\_\_ a. Select **AS/400 Operations Console Connection**.
  - \_\_\_ b. Click on **Configure**.
  - \_\_\_ c. Select **Dial out only**.
  - \_\_\_ d. Click on **OK**.
  - \_\_\_ e. Click on **Network**. Verify that the TCP/IP is selected in the *Dial out Protocol* field. Then click on **OK**
- \_\_\_ 15. To complete the setup, do:
  - \_\_\_ a. Click on **Continue**.
  - \_\_\_ b. If you get a message that says *Remote Access Service has been successfully installed*. Click on **OK**.

**Note:** This message does not appear for all installs.

- \_\_\_ c. Click on **Close**.
- \_\_\_ d. Click on **Yes** to restart.
- \_\_\_ 16.

### **Important:**

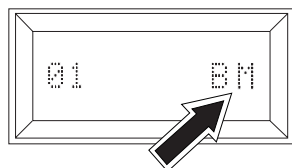
**After the PC has restarted or any time Remote Access Service is either installed or reinstalled, you need to install Windows NT Service Pack 3 (minimum level) before attempting to use Operations Console.**

**Note:** Do not remove the Service Pack CD until the PC is fully into its restart. It will be accessed again after you click on **Yes** to restart.

After the restart to either install or reinstall the service pack, go to "Windows NT Local Controlling System (LCS)".

## Windows NT Local Controlling System (LCS)

- \_\_\_ 1. Plug the system unit power cord into an electrical outlet or an uninterruptible power supply, if not already plugged in.
- \_\_\_ 2. Look at the Function/Data display on the control panel.
  - \_\_\_ a. Does a **B M** appear in the Function/Data display?



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**No**      **Yes**

## Windows NT Local Controlling System (LCS)

↓ Go to step 2g.

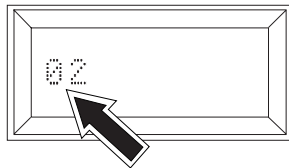
\_\_\_ b. Is the Function/Data display lit?

**Yes      No**

↓ Before calling your hardware service representative, do the following:

- Confirm that the electrical outlet is functioning by plugging in a lamp or other simple device.
- Ensure that the power cord is securely plugged into the system unit and electrical outlet.

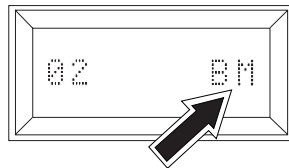
\_\_\_ c. Press the Up or Down select push button until **02** appears in the Function/Data display.



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\_\_\_ d. Press the Enter push button on the control panel.

\_\_\_ e. Press the Up or Down select push button until **B M** appears in the Function/Data display.



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\_\_\_ f. Press the Enter push button on the control panel.

\_\_\_ g. Press the Power push button that is located on the AS/400 control panel.

**Note:** The system takes approximately 5 to 10 minutes to power on and complete an IPL. You should see data changing in the Function/Data display.

\_\_\_ h. Is reference code **B6004501** shown in the Function/Data display?

**No      Yes**

↓ Go to step 3 on page 30.

\_\_\_ i. Is the Attention light lit?

**Yes      No**

↓ If the system shows no activity for more than 10 minutes, go to the "Handling and Reporting System Problems" section of the *Basic System Operation, Administration, and Problem Handling*, SC41-5206-04, which was shipped with your system. Then return here and continue.

\_\_\_ j. Is a System Reference Code (SRC) **x6xx500x** (where the x is any letter or number), shown in the Function/Data display?

**Yes      No**

↓ Go to the "Handling and Reporting System Problems"

## Windows NT Local Controlling System (LCS)

section of the *Basic System Operation, Administration, and Problem Handling*, SC41-5206-04, which was shipped with your system. Then return here and continue.

- \_\_\_ 3. Open the Operations Console icon.
  - \_\_\_ a. Click on **Start**.
  - \_\_\_ b. Click on **Programs**.
  - \_\_\_ c. Click on **IBM AS/400 Client Access**.
  - \_\_\_ d. Click on **AS/400 Operations Console**.
- \_\_\_ 4. Select **Local Controlling System (LCS) to AS/400 System**.
- \_\_\_ 5. Click on **Next**.
- \_\_\_ 6. Type the system name of the AS/400 you want to connect to. Then, click on **Next**.

**Note:** The system name can be a specified name and does not need to be the actual system name. For example, you could name the system ATLANTA, when the actual name is 10-12345.

- \_\_\_ 7. Indicate which Operations Console actions you want to use with your AS/400 system. If you installed **part number 97H7557 (Operations Console cable)** and **part number 97H7591 (Remote Control Panel cable)**, you need to select both (*Remote Control Panel and Console*). Then, click on **Next**.
- \_\_\_ 8. Click on **Next** to allow the system to detect the console communication port. System should find the port and select it automatically. If not, manually select.

**Note:** If you chose console only on the *Actions* display, you will not get any of the Remote Control Panel displays here.

- \_\_\_ 9. Click on **Next** to confirm communications port.
- \_\_\_ 10. Click on **Next** to allow the system to detect the Remote Control Panel communications port. The system should find the port and select it automatically. If not, manually select the port.
- \_\_\_ 11. Click on **Next** to confirm communications port.
- \_\_\_ 12. Select **No, do not allow remote PCs to connect**. Then, click on **Next**.

**Note:** Refer to *Client Access for Windows 95/NT - Setup* book after you have setup the console, if dial-in support is required.

- \_\_\_ 13. Click on **Finish**. Operations Console automatically starts and tries to connect.
- \_\_\_ 14. Did you configure Operations Console for a Remote Control Panel?

**Yes      No**

↓      Go to step 16.

- \_\_\_ 15. Did the Remote Control Panel start when setup was finished?

**Yes      No**

↓      Recheck the cables and Operations Console setup. Then go to step 14.

- \_\_\_ 16. Did the display *AS/400 DST Sign On* appear?

**Yes      No**

## Windows NT Local Controlling System (LCS)

- ↓ Recheck the cables and Operations Console setup and go back to step 14 on page 30.

Sign on using the system default values:

- In the *DST User ID* field, type **QSECOFR**.
- In the *DST Password* field, type **QSECOFR**.

Click on **OK**.

- \_\_\_ 17. Did the remote console start?

**No**      **Yes**

- ↓ You should see the IPL or Install the system menu. Select *Use Dedicated Service Tools (DST)*. Go to step 18.

Use the Remote Control Panel on the PC. If you don't have a Remote Control Panel on the PC, go to the Control Panel at the front of your AS/400 system unit.

**Note:** You are here because you are configuring Operations Console with a Remote Console but it failed to start.

- Press the Up or Down select push button to select a 21 in the Function/Date window.
- Press the Enter button.

- \_\_\_ 18. Did you get the display prompting you for a Dedicated Service Tools (DST) user id and password?

**Yes**      **No**

- ↓ Recheck the cables and Operations Console setup and go back to step 17.

- \_\_\_ 19. Sign on the DST display.

In the *User* field, type **QSECOFR**.

In the *Password* field, type **QSECOFR**.

- \_\_\_ 20. Select Work with DST environment.

- \_\_\_ 21. Select Work with system devices.

- \_\_\_ 22. Select Work with console mode.

- \_\_\_ 23. Select Operations Console.

- \_\_\_ 24. Press PF3.

- \_\_\_ 25. Select Start a service tool.

- \_\_\_ 26. Select Power the system down.

- \_\_\_ 27. Press PF10 to confirm the power down.

- \_\_\_ 28. Wait for the power light to turn off.

- \_\_\_ 29. **This ends the procedure.**

*Return to the printed instructions or to the page that sent you here.*

## A310: How to Install the Electronic Customer Support

Are you familiar with the installation steps for the electronic customer support feature?

**Yes**      **No**

- ↓ Go to "Electronic Customer Support Installation Details" on page 32.

## Fast Path for Electronic Customer Support Installation

1. Install the communications cable to the system communications adapter and to the modem the customer will use to support this feature.
2. Use the CALL QESPHONE command to enter the primary and alternate IBM Service Support numbers.
3. Use the WRKCONTINF command to enter the Support Contact Information.
4. Use the SNDSRVQRQS command to test the Electronic Support Feature.
5. Test the IBM remote support services by using the SNDPTFORD command to order the Preventive Service Planning (PSP) for the current level of the operating system.
6. End of the fast path electronic customer support procedure (F3).

## Electronic Customer Support Installation Details

1. Find the modem to be used for the electronic customer support and the installation documentation for that modem.
2. Ensure that the modem power cable is unplugged from the power source.
3. Is the modem an IBM 7855 or an IBM 7857 modem?

**Yes      No**

↓      Go to "Other Electronic Customer Support Modems".

4. 7855 and 7857 factory default setup is to have the modem speaker value set to "always on".
5. The recommended configuration is factory default *Configuration 3* (AS/400 configuration - AT equivalent: AT&C1&D2&H0&M3&V1\*P1\*T3\*V2#P1#X0)  
Refer to the 7855 or 7857 modem *Guide to Operations* to change the modem configuration:

*IBM 7855-10 - Guide to Operations, GA33-0160*

*IBM 7855-18 - Guide to Operations, GA33-0174*

*IBM 7857 Modem Guide To Operations, GA13-1839*

6. Ensure that the communications cable that goes between the system and the modem is connected to the system.  
Find the other end of that cable and connect it to the modem.
7. Ensure that a telephone or telephone jack is installed for the electronic customer support modem.
8. RSFTD003 goes here.  
Connect the **Line** socket on the modem to the telephone jack.
9. You have completed the hardware setup. Go to "How to Enter Information for the Electronic Customer Support Services:" on page 34.

**Other Electronic Customer Support Modems:** When you use a modem for electronic customer support, the modem must be compatible to the IBM 7855 or IBM 7857 modems.

1. For other modems, see the modem documentation.
2. Check the modem manual for the instructions to set the switches.
3. Ensure that the modem is:
  - Enabled to answer automatically
  - Enabled to originate a call
  - Set for bit synchronous dialing (high-level data link control (HDLC))
  - Set for HDLC protocol (with ASCII)

4. Ensure that the modem is set up so that the modem interface signals are controlled as shown in the following table.

Circuit	Abbreviation	CCITT	Pin	Comments
Transmit Data	XD	103	2	Controlled by DTE
Receive Data	RD	104	3	Received from DCE
Request to Send	RTS	105	4	Controlled by DTE
Ready for Sending	CTS/RFS	106	5	Received from DCE Follows RTS (circuit 105, pin 4)
Data Set Ready	DSR	107	6	Received from DCE Indicates connection is made
Data Terminal Ready	DTR	108	20	Controlled by DTE
Receive Line Signal Detect	CD	109	8	Not used
Data Signal Rate Select	RATE	111	23	Controlled by DTE
Transmit Signal Element Timing from DTE	DTE	113	24	Not used
Transmit Signal Element Timing from DCE	TCLK	114	15	Must be provided by DCE
Receive Signal Element Timing	RCLK	115	17	Must be provided by DCE
Calling Indicator	RI/CI	125	22	Must be provided by DCE
Loopback Maintenance Test	RLB	140	21	Controlled by DTE Must be enabled in DCE
Local Loopback	LLB	141	18	Controlled by DTE Must be enabled in DCE
Test Indicator	TI	142	25	Not used
Channel Select	CS	126	11	Not used
Data Rate Indicate	DRI	112	12	Not used
<b>Note:</b> CCITT = International Telegraph and Telephone Consultative Committee DTE = Data terminal equipment (system) DCE = Data communications equipment (modem)				

5. Any other modem functions should remain as set by the modem manufacturer.
6. Ensure that the communications cable that goes between the system and the modem is connected to the system.  
Find the other end of that cable and connect it to the modem.
7. Ensure that a telephone or telephone jack is installed for the electronic customer support modem.
8. **DANGER**

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

Connect the *Line* socket on the modem to the telephone jack.

9. You have completed the hardware setup. Go to "How to Enter Information for the Electronic Customer Support Services:" on page 34.

## How to Enter Information for the Electronic Customer Support Services:

1. Power on the modem that is connected to the electronic customer support feature line.
2. On the command line of the AS/400 Main Menu, type the following and press the Enter key:

**CALL QESPHONE**

3. The *Change Data Area (CHGDTAARA)* display appears.

Change Data Area (CHGDTAARA)

Type choices, press Enter.

Data area specification:

Data area . . . . .	> QESTELE	Name, *LDA, *GDA, *PDA
Library . . . . .	> QUSRSYS	Name, *LIBL, *CURLIB

Substring specifications:

Substring starting position . . . . .	> 001	1-2000, *ALL
Substring length . . . . .	> 32	1-2000

New value . . . . . >

Bottom

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display  
F24=More keys

4. Are you installing this system in the United States?

**Yes      No**

↓      Call your service representative for the IBM service support telephone numbers.

Go to step 6 of this procedure.

5. Does the *Change Data Area (CHGDTAARA)* display have the IBM service support numbers in the **New value** field?

**No      Yes**

↓      Go to step 8 on page 36.

6. In the *Change Data Area (CHGDTAARA)* display, type the **primary** telephone number in the **New value** field.

**Note:** For 19.2K Modems and higher, the United States support numbers for the **New value** field are:

**EAST...18002378804**

**WEST...18005252834**

**Note:** For 9.6K Modems and lower, the United States support numbers for the **New value** field are:

**EAST...18005278207**

**WEST...18003270949**

Change Data Area (CHGDTAARA)

Type choices, press Enter.

Data area specification:

Data area . . . . .	> QESTELE	Name, *LDA, *GDA, *PDA
Library . . . . .	> QUSRSYS	Name, *LIBL, *CURLIB

Substring specifications:

Substring starting position . . . . .	> 001	1-2000, *ALL
Substring length . . . . .	> 32	1-2000

New value . . . . . > 'SST918005278207'

Bottom

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display  
F24=More keys

**Notes:**

- a. Do not type spaces or separators as part of the telephone number. TYPE THE PHONE NUMBER EXACTLY AS SHOWN ABOVE.
- b. The first four positions of the *New value* field show the connection information:
  - Modem speaker on (SS)

**Note:** For the 7857 modem, delete **SS** designation for modem speaker.

To have the modem speaker off when the **SS** command is not included, you will need to change the modem speaker value to “never on”. Refer to the modem manual for more information on changing configuration.

- Tone dialing (T) or pulse dialing (P)
- Outside line number (for example, 9).
- If you encounter problems, contact Rochester Product Support and refer to **DTAECS 7857MODM** tip.

Press the Enter key.

7. The *Change Data Area (CHGDTAARA)* display appears again to allow you to enter the alternate support number.

Change Data Area (CHGDTAARA)

Type choices, press Enter.

Data area specification:

Data area . . . . .	> QESTELE	Name, *LDA, *GDA, *PDA
Library . . . . .	> QUSRSYS	Name, *LIBL, *CURLIB

Substring specifications:

Substring starting position . . . . .	> 001	1-2000, *ALL
Substring length . . . . .	> 32	1-2000

New value . . . . . > 'SST918003270949'

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display  
 F24=More keys

Type the **alternate** support telephone number in the *New value* field and press the Enter key.

8. Press the Exit key (PF3) as many times as necessary to return to the AS/400 Main Menu.
9. On the command line of the AS/400 Main Menu, type  
CHGMSGQ QSYSOPR \*BREAK

and press the Enter key.

**Note:** The QSYSOPR message queue is in break mode, therefore, informational messages may appear on the display as you perform the remaining tasks.

If the Display Messages display appears, read the messages and follow the instructions. If a message needs a reply, *C* (cancel), *I* (ignore), or *R* (retry) appears at the end of the message. For more information about messages, see the "Handling Messages" section in the *Basic System Operation, Administration, and Problem Handling*, SC41-5206-04.

10. On the command line of the AS/400 Main Menu, type  
**WRKCNTINF**

and press the Enter key.

11. The Work with Support Contact Information display appears.

```

                                Work with Support Contact Information
                                System: XXXXXXXX

Select one of the following:

    1. Work with question and answer (Q & A) database
    2. Work with local service information
    3. Work with IBM product information
    4. Work with technical information exchange (TIE)
    5. Work with upgrade order information
    6. Work with service providers

Selection or command
====>

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
(C) COPYRIGHT IBM CORP. 1980, 1996.

```

Select the *Work with Service providers* option and press the Enter key.

12. The Work with Service Providers display appears.

```

                                Work with Service Providers
                                System: XXXXXXXX

Position to . . . . .      Control point
Network ID . . . . .

Type options, press Enter.
  1=Add  2=Change  3=Copy  4=Remove  5=Display

Opt      Control
          Point      Network ID      Description
2         *IBMSRV
-         USASYSPEP    APPN           IBM Service Support
                                         System PEP

F3=Exit  F5=Refresh  F12=Cancel

```

Type a 2 (Change) in the *Opt* field on the same line as **\*IBMSERV** information.

Press the Enter key.

13. The *Change Service Provider* display appears.

Change Service Provider		System: XXXXXXX
Control point . . . . .	: *IBMSRV	
Network ID . . . . .	:	
Description . . . . .	: IBM Service Support	
Type changes, press Enter.		
Service support center telephone numbers:		
Hardware service . . . . .	1-800-426-7378	
Software service . . . . .	1-800-237-5511	
F3=Exit F5=Refresh F12=Cancel		Bottom

If you are installing this system in the United States, type the following on the Change Service Provider display:

Hardware service: 1-800-426-7378

Software service: 1-800-237-5511

If you are not installing this system in the United States, call your service representative for the service telephone numbers.

Press the Enter key.

14. The *Work with Service Providers* display appears again, with the message:

Information for service  
provider \*IBMSRV changed.

Press F12(Cancel) as many times as necessary to return to the *Work with Support Contact Information* display.

15. Select the Work with local service information on the *Work with Support Contact Information* display.
16. The *Work with Local Service Information* display appears.

Work with Local Service Information		System: XXXXXXX
Select one of the following:		
1. Display service contact information 2. Change service contact information		
Selection 2		
F3=Exit F12=Cancel		

Select the Change service contact information option.

17. The *Change Service Contact Information* display appears.

Change Service Contact Information		System: XXXXXXX
Type changes, press Enter.		
Company . . . . .	A S JOURNEY, INC	
Contact . . . . .	N A VIGATOR	
Contact telephone numbers:		
Primary . . . . .	1-444-1234567	
Alternative . . . . .	1-444-1234589	
Fax telephone numbers:		
Primary . . . . .	1-444-1234590	
Alternative . . . . .		
Mailing address:		
Street address . . . . .	999 Yellowbrick Rd.	
City/State . . . . .	Big Green, KS	
Country . . . . .	USA	
Zip code . . . . .	000000000000	
F3=Exit F4=Prompt F5=Refresh F12=Cancel		

Type the customer information. Page forward to the next display.

18. The following display appears:

System: XXXXXX

Type changes, press Enter.

National language version	2924	F4 for list
Media for mailing PTFs . .	1	1=Automatic selection
		2=Half inch reel, 1600 bpi
		3=Half inch reel, 6250 bpi
		4=Half inch cartridge
		5=8 MM cartridge
		6=Quarter inch cartridge
		7=Quarter inch mini cartridge
		8=CD-ROM

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel

19. Enter the correct information in the **National language version** and **Media for mailing PTFs information**

**Note:** Press the Help key for more information about the *Media for mailing PTFs* field.

Press the Enter key.

20. The Work with Local Service Information display appears with the following message:

Data area QSSF created in library QUSRSYS.

**Note:** If the contact information had been created previously and you change it, the following message appears:

Support contact information updated.

21. Press F3 (Exit).
22. You have completed entering the information for the electronic customer support remote services. Go to “Test the Electronic Customer Support Remote Services” on page 40.

### Test the Electronic Customer Support Remote Services

This section contains instructions on how to perform the following tests:

- Connection/Registration test
- Operating System Preventive Service Planning (PSP) test

Ensure that you have entered the remote service information (see “How to Enter Information for the Electronic Customer Support Services:” on page 34) before you perform this procedure.

1. On the AS/400 command line, type

**SNDSRVRQS \*TEST**

and press the Enter key.

2. From the Send Test Request display, press the Enter key to send a test request to the IBM service support system.

Messages showing the status of the request are shown at the bottom of the display.

3. If the test completes successfully, the AS/400 Main Menu appears with the following message:  
Test request complete.
4. Did the test complete successfully?

Yes      No

↓      Note the error message and contact your service representative.

**This ends the procedure.**

5. To perform the operating system Preventive Service Planning (PSP) test, type the following on the AS/400 command line:

**SNDPTFORD SF98vrm**

and press the Enter key.

(where v = Version, r = Release, and m = modification)

6. The Verify Contact Information display appears.  
Press the Enter key to accept the information.

7. The Select Reporting Option display appears.

Select the *Send service request now* option and press the Enter key.

Select Reporting Option System: XXXXXXX

Problem ID . . . . . : XXXXXXXXX

Current status . . . . . : READY

Problem . . . . . : Preventive service planning information requested.

Select one of the following:

1. Send service request now
2. Do not send service request
3. Report service request by voice

Selection:

1

F3=Exit    F12=Cancel

Messages showing the status of the request will appear at the bottom of the display.

8. To display the PSP cover letter, type one of the following on the AS/400 command line:

For **V4R2**

DSPPTF 5769SS1 SF98420

For **V4R3**

DSPPTF 5769SS1 SF98430

For **V4R4**

DSPPTF 5769SS1 SF98440

For **V4R5**

DSPPTF 5769SS1 SF98450

and press the Enter key.

9. You have completed the test of the electronic customer support remote services.

Press the Enter key.

10. The AS/400 Main Menu appears.
11. **This ends the procedure.**

## A330: How to determine where to place the frame/rack

### CAUTION:

If the system is on a raised floor, be careful around the holes in the floor.  
(RSFTC065)

Locate the frame/rack as specified on the customer's floor plan. If that is not available, see the physical planning guide (at <http://www.as400.ibm.com/tstudio/planning/plngstrt.htm> or on the Information Center CD), for examples of how to position system frames and racks.

### 1. To lock the casters:

Lock each caster by turning the screw clockwise until it is finger tight.

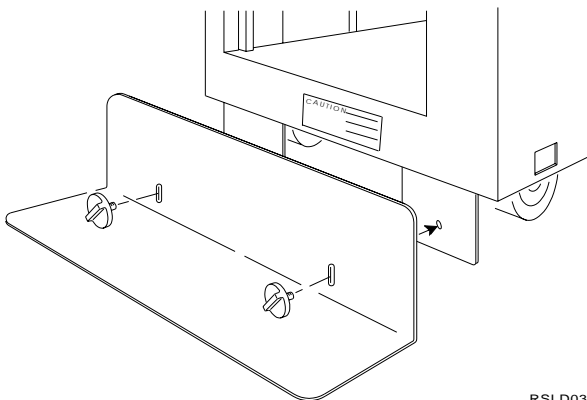
2. Ensure that you lock all casters.

For 940x Model Advanced Series frames, rotate each caster assembly until the winged screw is facing inside before locking it.

### 3. For rack frames:

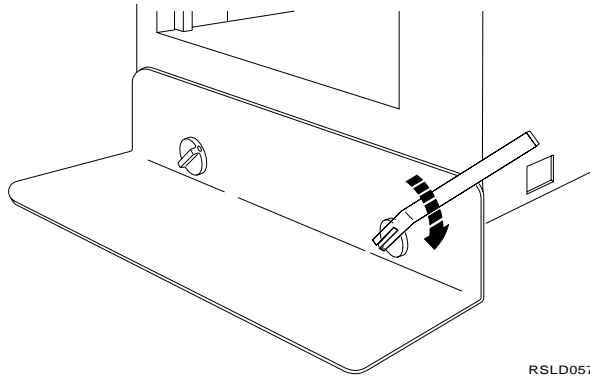
Get the stabilizer, the stabilizer screws, the wrench, and the tightening rod.

4. Line up the stabilizer holes with the holes in the **front** of the rack, as shown.



RSLD037-1

5. Ensure that the base of the stabilizer is on the floor.
6. Use the two screws to fasten the stabilizer to the frame. Turn the screws clockwise. Use the wrench to get these screws **VERY TIGHT**.



*Return to the printed instructions or to the page that sent you here.*

## A813: Attention Notice for Temperature Acclimation for Systems Shipped in Cold Environments

### Attention!:

When the system has been shipped in a cold environment, there is a possibility that water condensation will form on the cooler surfaces inside the machine. To avoid this, allow sufficient time to reach equilibrium with warmer indoor temperatures before removing the shipping bag. Leave the system inside the shipping bag for 6 to 12 hours to let it acclimate to the final physical operating environment. **DO NOT** plug the system power cord in or attempt to power the system on during the acclimation period.

*Return to the printed instructions or to the page that sent you here.*

## A815: Estimated Installation and Model Conversion Times for 6xx and Sxx

### Installation

Table 1. Model 6xx, and Sxx. Installation Workload Estimates

Model	Install Activity (Hours)	Planning Activity (Hours)	Total
600, S10	3	0 (customer task)	2.5
620, S20	6	1.5	6.0
640, S30	7.5	3	9
650, S40, SBx	9	3	10

### Conversions and Migrations to Model 6xx/Sxx

Table 2. Model 6xx/Sxx. Model Conversion Estimated Times

Converting From Model:	Converting To Model:	Time (Hours)
<b>Advanced Servers</b>		
40S	S10	8.5
40S	S20	10.5

## A815

Table 2. Model 6xx/Sxx (continued). Model Conversion Estimated Times

Converting From Model:	Converting To Model:	Time (Hours)
50S	S20	12
50S	S30	10.5
53S	S30	10.5
53S	S40	12
S10	S20	9
S20	S30	11
S30	S40	10.5
<b>Advanced Series</b>		
Fxx	600	9
Fxx	620	11
400	600	8
400	620	10
500	620	11.5
510	620	11.5
510	640	10.5
530	640	10.5
530	650	12
Fxx	640	11
Fxx	650	12.5
600	620	9
620	640	11
640	650	10.5

*Return to the printed instructions or to the page that sent you here.*

## A835: How to solve problems that occur at power-on time

**Note:** The term 'frame' is refers to the System Unit (SU), 507x I/O Expansion Towers, and 508x Storage Expansion Towers.

Determine what action to take, based on the system conditions:

- If characters did not appear in the operator control panel Function display area, go to "System power problem" on page 45.
- If a frame/rack and all of its devices did not power on, or if a Rack Power Ready indicator continues to blink, go to "Frame power problem" on page 45.
- If one or more devices in a rack failed to become ready, do the following:
  1. For each device that did not power on correctly, verify that:
    - The power switch on the front of the device is set to the 1 (On) position.
    - If the problem has been corrected, **return to the printed instructions or to the page that sent you here.** If the problem remains, continue with the following steps.
  2. Make a note of any devices that failed to power on as expected.

3. Power off the system at the operator's control panel.
4. For each device that did not power on correctly, verify that:
  - The circuit breaker on the device is set to the 1 (On) position.
  - The power cable is installed and both ends are correctly seated (at the device and in the power control section).
  - The circuit protector (CP) in the power control section is set to the 1 (On) position.
5. Power on the system.
6. If the problem has been corrected, **return to the printed instructions or to the page that sent you here.**
7. If the problem has **not** been corrected, perform analysis using the service manual for your system. After the problem is corrected, **return to the printed instructions or to the page that sent you here.**

### System power problem

1. Verify that:
  - The rack Emergency Power-Off (EPO) switch is set to the 1 (On) position for each rack.
  - For SPCN hardware with non-SPCN racks attached, there is a terminating plug correctly installed in socket J10 of the last rack in the power sequence cable chain.
  - For SPCN racks, without non-SPCN racks attached, there is a terminating plug correctly installed in socket J18 of the last rack in the power sequence cable chain.
  - The system unit (SU) power cable is correctly installed and plugged into the power source.
  - Circuit breakers CB1 and CP7 in the rack power control section are set to the 1 (On) position. (CP7 is not present on SPCN hardware.)
  - Circuit protector CP1 is set to the 1 (On) position.
  - For SPCN hardware, a device power cable has one end plugged into the 504x located in rack has the other end plugged into J1 in the power control section.
  - The correct ac voltage is present at the power source.
2. Attempt to power on the system once more.
3. If the problem has been corrected, **return to the printed instructions or to the page that sent you here.**
4. If the problem has **not** been corrected, perform analysis using the using the service manual for your system.  
 After the problem has been corrected **return to the printed instructions or to the page that sent you here.**

### Frame power problem

1. Observe which frame(s) did not power on correctly.
2. Power off the system at the operator's control panel.
3. For each frame that did not power on correctly, verify that:
  - The frame power cable is correctly installed and plugged into the power source.

The System Unit, 504x frames, 507x frames and 508x frames, and all attached SPCN/non-SPCN general purpose rack frame ac power cord is connected to customer power.

- Circuit breakers CB1 and CP7 in the power control section of the racks are set to the 1 (On) position. (CP7 is not present on SPCN hardware. )
  - The correct ac voltage is present at the power source.
4. Attempt to power on the system once more.
  5. If the problem has been corrected, **return to the printed instructions or to the page that sent you here.**
  6. If the problem has **not** been corrected, perform analysis using the service manual for your system.

*Return to the printed instructions or to the page that sent you here.*

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## Working with Cables

### A016: How to handle optical cables

See Help A001 for laser safety notices.

**Attention:** Handle the optical cables with care to prevent damage.

**For cable information see Table 7 on page 173.**

- Do not place the cables near any sharp edges or points that could cut the outer covering.
- Do not place the cables near any objects that are very hot or very cold.
- Do not coil the cables to a diameter less than 16.0 cm (6.3-inches).
- Do not bend the cables to a radius less than 3.0 cm (1.2-inches).
- Do not attach a pull wire to the connectors.
- Do not grip the optical cables with mechanical tools.
- Do not remove the dust covers from the connectors until you are ready to clean the connectors and attach the cables.
- Cleaning the connectors before attaching them is recommended but not required if the connector dust caps have been in place.

If you need to clean the connectors, follow the instructions in the Fiber Optic Cleaning Kit (IBM part 5453521) to clean the connectors.

- Use care when connecting the cables, to prevent damage to the housing or the end of the fiber-optical cable.

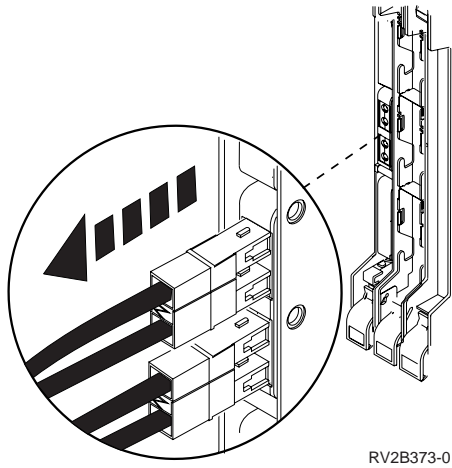
#### **Optical Bus Cable Removal:**

1. Switch off system power

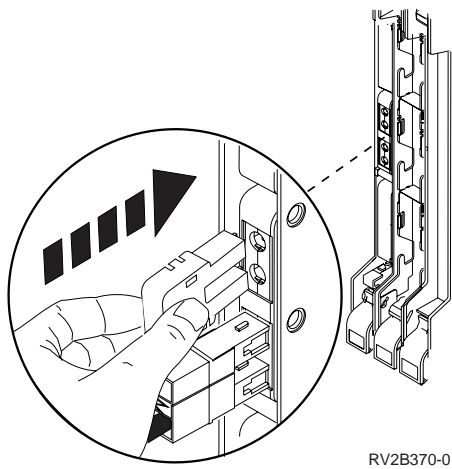
**Attention:** Do not use pliers or similar tools to hold an optical bus cable.

Do not pull on the cable to disconnect the cable connector.

2. At each end of the optical bus adapter card, hold the cable connector tightly and pull to disconnect the cable.



3. Install a wrap plug into the connector on each optical bus adapter card.



**Attention:** Do not use pliers or similar tools to hold an optical bus cable.

Do not pull on the cable to disconnect the cable connector.

4. Remove the optical bus cable from the system.

### Optical Bus Cable Installation:

1. Ensure that you have switched off the power to the system.

**Attention:** Do not remove the dust covers until you are prepared to install the cables.

2. Remove the dust covers from the fiber-optic connectors.

**Attention:** When inserting the cable connectors, use extreme care to prevent damaging the housing or scratching the ends of the fiber optic cables.

3. Switch on system power.

**This ends the procedure.**

*Return to the printed instructions or to the page that sent you here.*

## A060: How to connect cables to cards

### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

**Attention:** When you connect the cable to the card or 2-port attachment, carefully align the cable connector with the card connector to ensure that you do not bend the pins.

For cable information see Table 7 on page 173

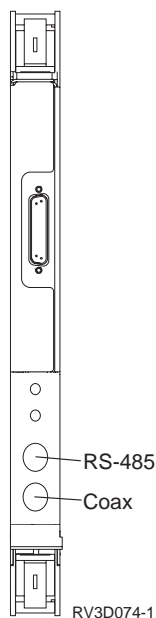
To connect the cable to the card, find the card in the following table and go to the appropriate page.

Name of card	Page
2617, 2723, 2838	
Ethernet	Go to page 54.
2618	
Distributed Data Interface Communication IOP	Go to page 59.
2664	
Integrated Fax IOP	Go to page 56.
2720, 2721	
LAN/WAN IOP	Go to page "LAN/WAN IOP" on page 50.
2811, 2812, 2815, 2816, 2818, 2819	
ATM	Go to page "ATM" on page 49.
2668	
Wireless Lan Adapter	Go to page 48.
6506, 6616, 6617	
File Server IOP	Go to page 52.
2724	
16/4Mbps Token-Ring IOA	Go to page 56.
Cards and cables with thumbscrew connectors	Go to page 57.
Two-port communications attachment	Go to page 60.

### Wireless Lan Adapter



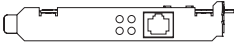
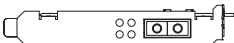
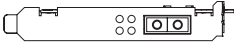
- Find the coaxial cable.
  1. Locate the bottom connector on the 2668 card.
  2. Align and tighten the coaxial cable connector to the bottom connector on the 2668 card. This cable connects to the antenna cable.
- Find the RS-485 cable.
  1. Locate the top connector on the 2668 card.


- Align the RS-485 cable connector to the top connector of the 2668 card. Push the connector into place. This cable connects to a Wireless Lan Access Point (for example, the repeater unit).



## ATM

Find one of the following cables to connect to the 281x adapter card. The cable is not supplied with the adapter card.

2811 - Adapter Card Number Unshielded Twisted Pair 	25Mbps Asynchronous Transfer Mode (ATM) card that connects the AS/400 system unit into an ATM network.
2812 - Adapter Card Number Coax cable and the T3/DS-3 interface. 	45Mbps Asynchronous Transfer Mode (ATM) card that connects the AS/400 system unit into an ATM network using Coax cabling and the T3/DS-3 interface.
2815 Adapter Card Number Unshielded Twisted Pair: (UTP-5) interface. 	155Mbps Asynchronous Transfer Mode (ATM) card that connects the AS/400 system unit into an ATM network.
2816 - Adapter Card Number Multi-Mode Fiber (MMF) 62.5 micron interface. 	155Mbps Asynchronous Transfer Mode (ATM) card that connects the AS/400 system unit into an ATM network.
2818 - Adapter Card Number Single-Mode Fiber (SMF) 9 micron interface. 	155Mbps Asynchronous Transfer Mode (ATM) card that connects the AS/400 system unit into an ATM network.

2819 - Adapter Card Number	34Mbps Asynchronous Transfer Mode (ATM) card that connects the AS/400 system unit into an ATM network.
Coax cable and the E3 interface. 	

1. Label the cable, for example, **C03**, for a cable connected to a card installed in position C03.
2. Align the cable connector with the connector on the 281x adapter card.
3. Push the RJ45 connector into the card connector until the connector clicks.
4. Connect the other end of the cable to a network or a device. Use the manual for the network or device.

## LAN/WAN IOP

For a 2720 or 2721 card:

Find one of the following cables for the 2720 or 2721 adapter card. The connectors look like this:

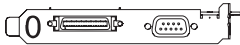


Figure 3. 2720 card side view.

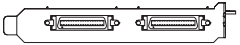


Figure 4. 2721 card side view.

Cables that can be connected to port 1 on the 2720 adapter card:

- PN 44H7582 – 2-port twinaxial attachment cable **OR**
- PN 73X5645 – 4-port twinaxial attachment cable

Cables that can be connected to port 0 on the 2720 adapter card or the 2721 card:

- EIA-232/V.24 Non-Enhanced Communications Cables

Part Number	Description
44H7480	All others, 6.1 Meter (20 Foot)
44H7481	All others, 15.3 Meter (50 Foot)
44H7482	Germany, 6.1 Meter (20 Foot)
44H7483	Germany, 15.3 Meter (50 Foot)
44H7484	Japan, 6.1 Meter (20 Foot)
44H7485	Japan, 15.3 Meter (50 Foot)

- EIA-232/V.24 Enhanced Communications Cables

Part Number	Description
44H7486	All others, 6.1 Meter (20 Foot)
44H7487	All others, 15.3 Meter (50 Foot)
44H7489	Germany, 6.1 Meter (20 Foot)
44H7490	Germany, 15.3 Meter (50 Foot)
44H7492	Japan, 6.1 Meter (20 Foot)

44H7493	Japan, 15.3 Meter (50 Foot)
44H7494	Japan, 24.4 Meter (80 Foot)

- V.35 Communications Cable
  - PN 44H7495 – 6.1 Meter (20 Foot)
  - PN 44H7496 – 15.3 Meter (50 Foot)
  - PN 44H7497 – 24.4 Meter (80 Foot)
- V.36/RS449 Communications Cable
  - PN 44H7498 – 6.1 Meter (20 Foot)
  - PN 44H7499 – 15.3 Meter (50 Foot)
  - PN 44H7500 – 45.8 Meter (150 Foot)
- X.21 Communications Cable
  - PN 44H7501 – 6.1 Meter (20 Foot)
  - PN 44H7502 – 15.3 Meter (50 Foot)

Label the cable.

Connect the cable to the connector on the 2720 or 2721 adapter card.

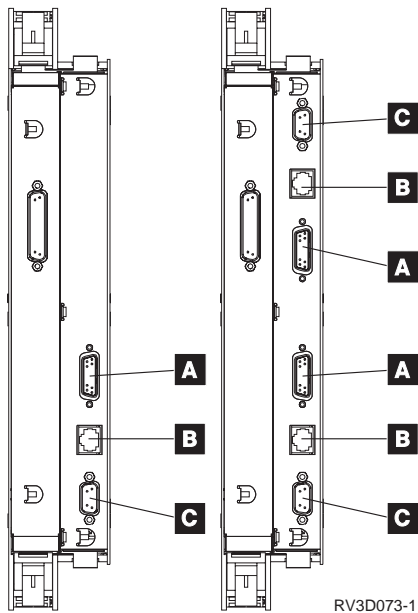


Figure 5. Integrated Netfinity Server Card - 6516 thru 6519 has one set of plugs, 6526 thru 6529 has two sets of plugs.

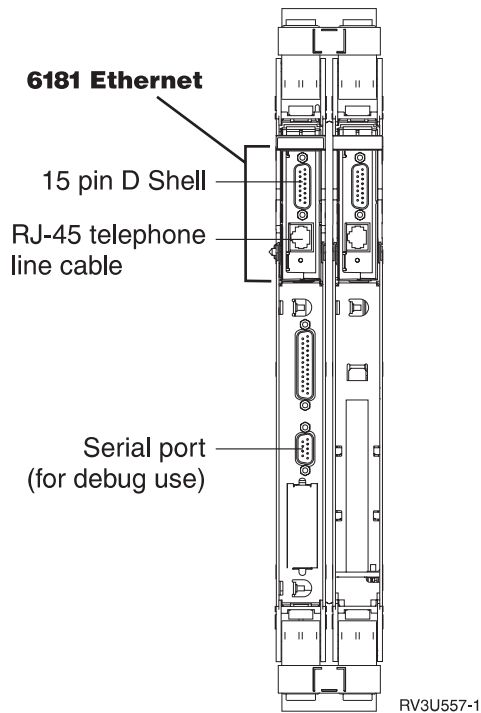


Figure 6. 6616 Integrated Netfinity Server Card

### Integrated Netfinity Server

There are two different File Server IOP cards as shown. On the card with two ports, the bottom set of A, B, C is port 1 and the top set of A, B, C is port 2. Connect only 1 cable to a port.

1. Find the cable.
2. Align the cable connector with the connector on the card.
3. For a connector in position **A** or **C**, push in the connector and tighten the thumbscrews. For a connector in position **B**, push in the connector until locked into place. Repeat the procedure if you have two ports.

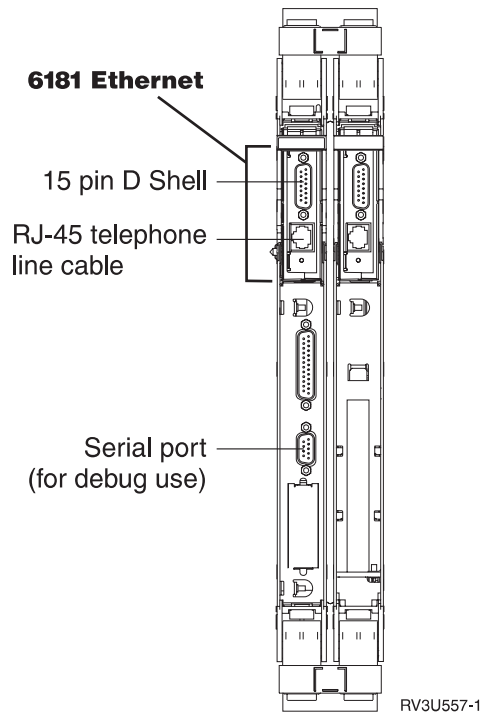


Figure 7. 6616 Integrated Netfinity Server Card

**For the 6617 card:**

Locations for connecting cables to the FC 6617 card are shown in Figure 8 on page 54.

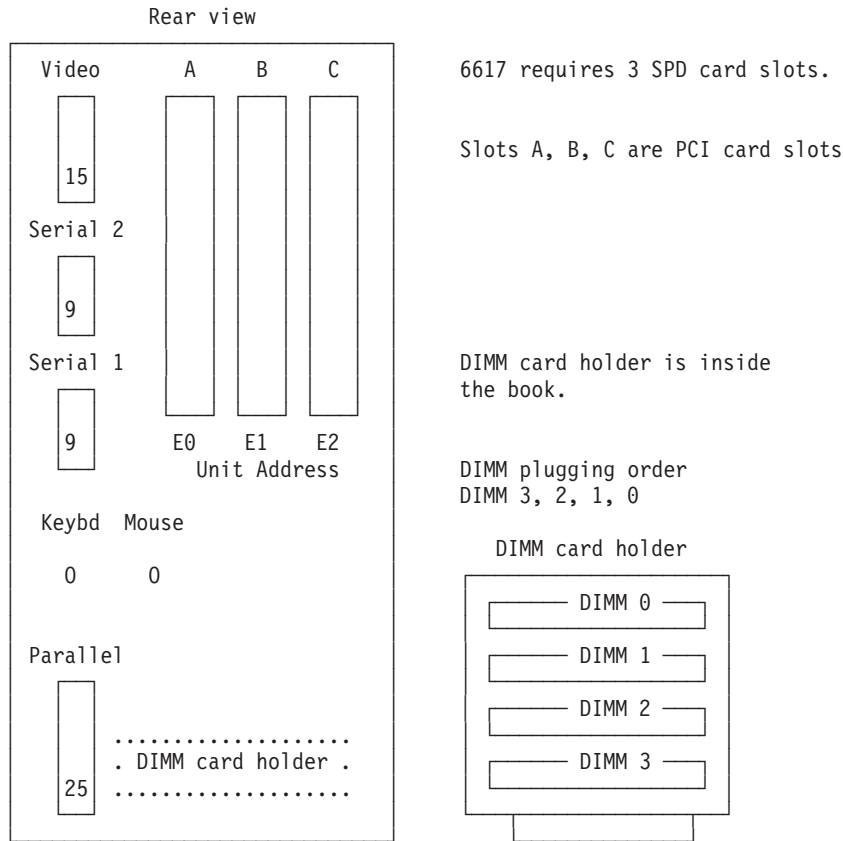


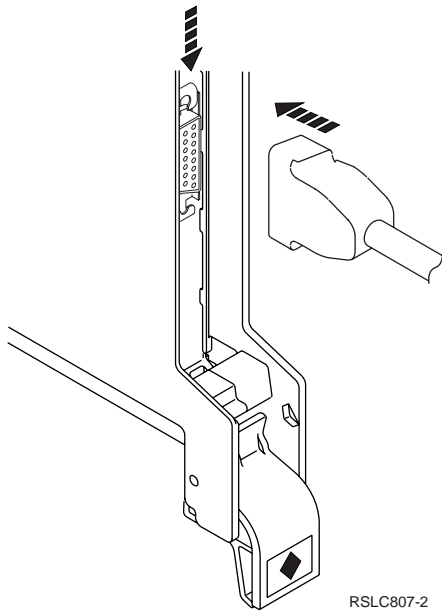
Figure 8. 6617 Integrated Netfinity Server Card

Integrated Netfinity Server supports the following PCI adapter card types in card slots:

- 2723 — PCI Ethernet IOA
- 2724 — PCI 16/4Mbps Token-Ring IOA
- 2838 — PCI 100/10Mbps Ethernet IOA

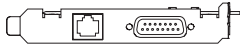
### Ethernet Network Cable

1. Align the cable connector to the card connector.
2. Seat the cable and push down on the slide latch on the card to lock the cable in place.



#### For the 2723 card:

Find one of the following cables for the 2723 adapter card. The connectors look like this:



- RJ45 Ethernet cable
- Ethernet cable

**Note:** The RJ45 Ethernet network cable and the Ethernet network cable is not supplied with the adapter card.

Connect the cable to the connector on the 2723 adapter card by doing the following:

1. Label the cable. You will connect only **one** cable to the 2723 card.
2. If you are connecting the RJ45 Ethernet cable, first, connect PN 75G5958, (a short external filter cable) to the cable connector on the 2723 card. Then connect the network cable.
3. Align the cable connector with the connector on the 2723 adapter card.
4. Connect the other end of the cable to a network or a device. Use the manual for the network or device.

#### For the 2838 card:

Find an RJ45 Ethernet network cable to connect to the 2838 adapter card.

The 2838 adapter card will allow the AS/400 to:

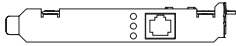
#### Notes:

1. attach to standardized 100Mbps high speed Ethernet LANs.
2. allow attachment to existing 10Mbps Ethernet LANs.

The cable is not supplied with the adapter card.

## A060

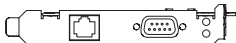
1. Label the cable, for example, **C03** , for a cable connected to a card installed in position C03.
2. Align the cable connector with the connector on the 2838 adapter card. The connector looks like this:



3. Push the RJ45 connector into the card connector until the connector clicks.
4. Connect the other end of the cable to a network or a device. Use the manual for the network or device.

### 16/4Mbps Token-Ring IOA

Find one of the following cables for the 2724 adapter card. The connectors look like this:



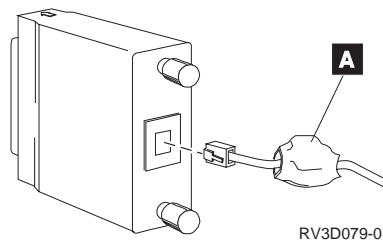
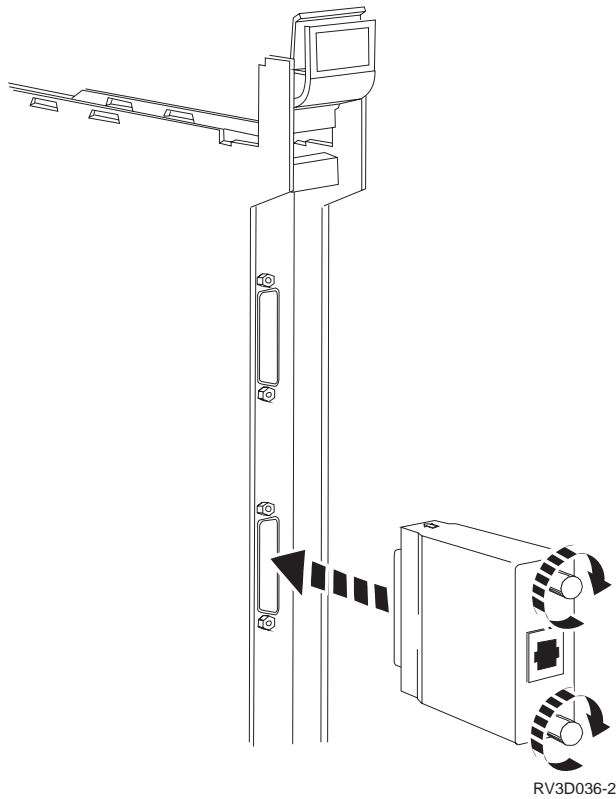
- RJ45 Token-Ring cable (not supplied with the adapter card).
- Token-Ring cable (The 2.44 meter (6 foot) token-ring cable, PN 6339098, is supplied with the adapter card).

Connect the cable to the connector on the 2724 adapter card by doing the following:

1. Connect only **one** cable to the 2724 adapter card. If you are connecting the RJ45 Ethernet cable, first, connect PN 75G5958 (a short external filter cable) to the cable connector on the 2723 card. Then connect the network cable.
2. Label the cable.
3. Align the cable connector with the connector on the 2724 adapter card.
4. Connect the other end of the cable to a network or a device. Use the manual for the network or device.

### Integrated Fax IOP

1. Align one of the fax couplers with the connector on the card.
2. Push in the coupler and tighten the thumbscrews.
3. To install the second coupler, repeat the procedure.



4. Find the telephone line cable.
5. Align the cable connector with the connector on the coupler.

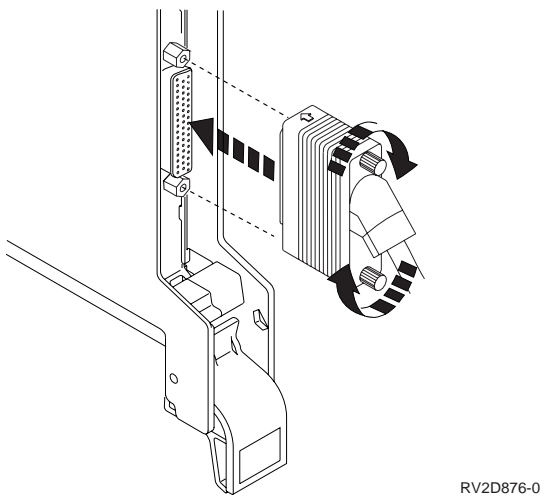
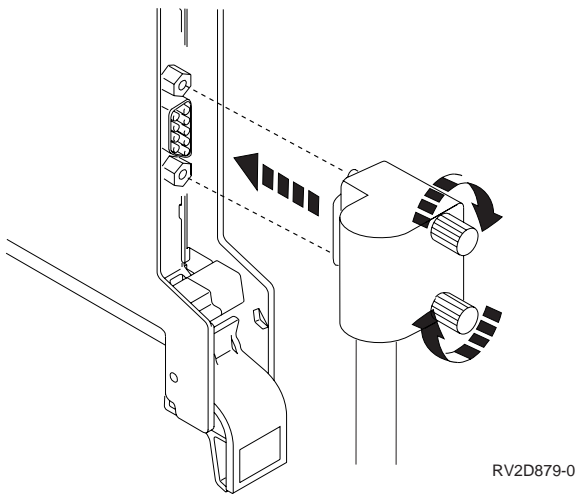
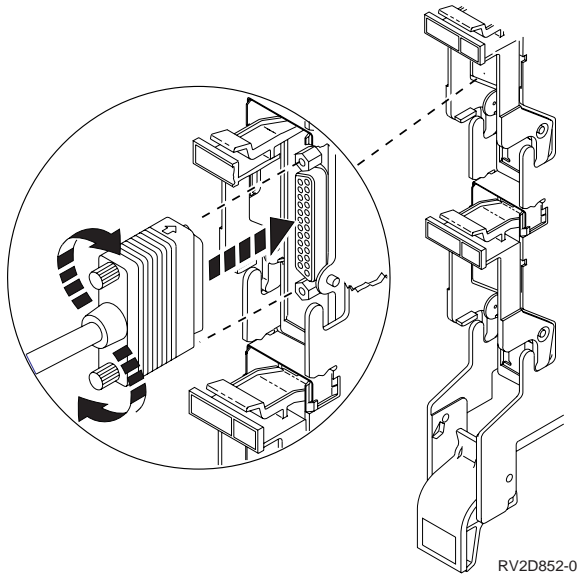
**Note:** Ensure that you connect the cable **A**, as shown.

6. Push in the connector until it locks into place.

### **Cards and Cables with Thumbscrew Connectors**

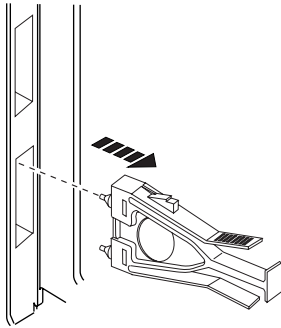
All thumbscrew connectors connect in the same way.

1. Align the cable connector with the connector on the card.
2. Seat the cable and tighten the two thumbscrews.

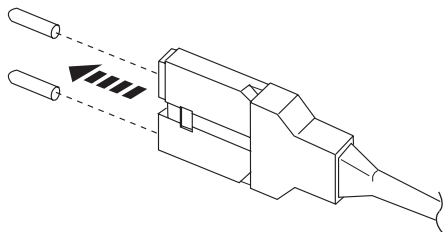


## Fiber-Optic Distributed Data Interface Communications IOP

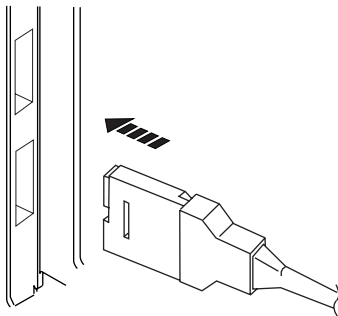
1. Remove the process plug. Squeeze the tabs together and pull the plug towards you. Discard the plug.
2. Look for dust covers inside the plug and remove them before you install the cable.
3. Use the information in the FDDI Standard ANSI X3T9.5/84-48 to determine how to key the cable.
4. Align the cable to the bottom connector (A) on the card.
5. Push the connector until it locks. If you have a second cable, remove the process plug and connect the cable to the top connector (B).



RV2D317-0



RV2D880-0



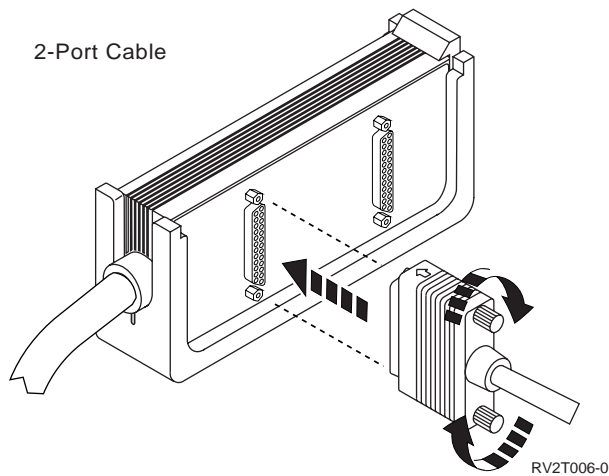
RV2D315-1

## Two-Port IOA Communications With Latching Cables Attachment

1. Align the cable connector with the mating connector on the IOA card.
2. Push the cable connector into the mating card connector until the cable connector latches on both sides of the card connector.

## Two-Port Communications Attachment

1. Align the communications cable with one of the ports on the attachment.
2. Seat the cable and tighten the two thumbscrews.



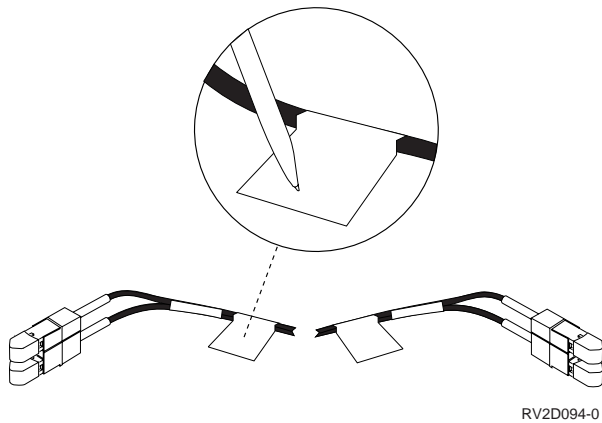
*Return to the printed instructions or to the page that sent you here.*

## A071: How to find, label, and connect an optical bus cable

**Note:** The connectors you are working with may be different from the connectors that are shown in this procedure. The following is an example of how to find, label and connect an optical bus cable.

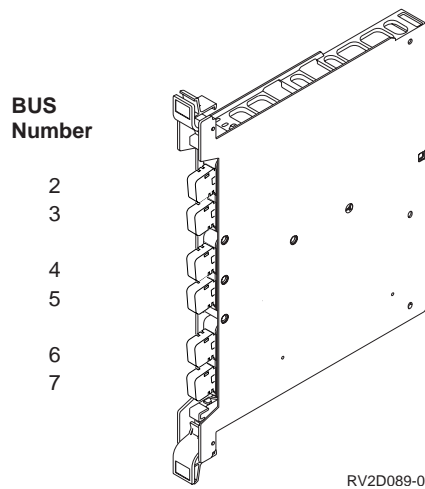
See HELP A081 for a Model 6xx/SB1 bus cabling layout.

1. Find the sheet of cable labels in the shipping group. (Make your own, if labels are not in the shipping group.)
2. Find a cable with the specified CIN number in the shipping group parts.  
(For cable information see Table 7 on page 173).
3. Attach a label to each end of the cable.



4. Insert one end of the cable into the specified expansion/extension unit.

5. Using the information that is given on the printed instructions, find the card and port where the cable is to be connected.
6. The following figure shows the Bus Adapter.

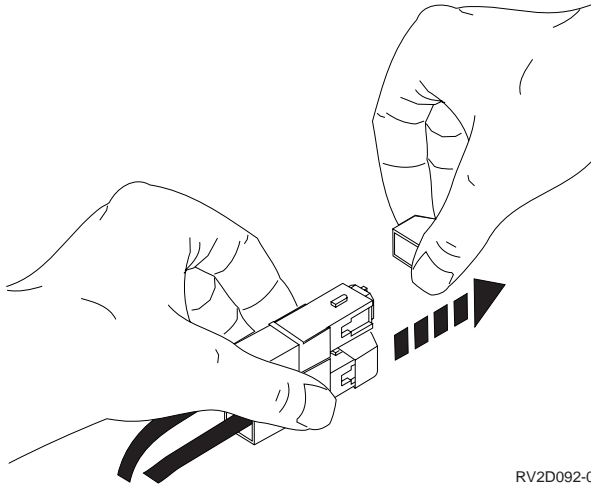


### 7. Model 6xx and SB1 Optical Bus Components

Table 3. Optical Bus connection components

System Unit	Optical Bus Adapter	Optical Link Processor (OLP)	Expansion Tower Supported
620	none <sup>1</sup>	2686 (266 Mbps)	FC.5044
S20		2688 (1063 Mbps)	FC.5072, FC.5073, FC.5082, FC.5083
640	2695, 2696	2688	FC.5072, FC.5073, FC.5082, FC.5083
650		2686	FC.5044, FC.5070 <sup>2</sup> , FC.5071 <sup>2</sup> , FC.5080 <sup>2</sup> , FC.5081 <sup>2</sup>
S30, S40, SBx	2695, 2696	2688	FC.5072, FC.5073, FC.5082, FC.5083
<b>Note:</b> <sup>1</sup> OLPs connect directly to back plane of FC.7129 PCI Expansion Cage <sup>2</sup> 266 Mbps 2680 Bus Receiver connects one cable only.			

8. Remove the optical wrap connector from the paired ports on the card you are working with. Save it for future use.
9. Remove the dust covers from the ends of the cable connectors. Save them for future use.



10. If cleaning the connector ends is necessary, follow the instructions in the Fiber Optic Cleaning Kit (IBM part 5453521).
11. Connect the optical bus cable to the port on the card.
  - a. Hold the connector so the yellow part is on top.
  - b. Align the connector with the port.
  - c. Push on the connector until it seats.
12. Repeat steps 4 through 11 on this page for the other end of the cable.
13. Find the bus number labels in the shipping group parts (or make labels of your own) for these two buses.
14. Install the bus numbers in the 507x, 508x, or 504x card enclosure. Put the numbers inside the card enclosure, to the left of slot 1.

*Return to the printed instructions or to the page that sent you here.*

## A081: System Bus Cabling Layout for Model 6xx and SB1

The following are 6xx or SB1 Supported Optical Bus Features and Frames:

### FC 2696

Optical Bus Adapter

### FC 2695

Optical Bus Adapter

### FC 2688

Optical Link Processor (1063 Mbps)

### FC 2682

Optical Bus Receiver (1063 Mbps)

### FC 2686

Optical Link Processor (266 Mbps)

### FC 2680

Optical Bus Receiver (266 Mbps)

### FC 2684

Optical Bus Receiver (266 Mbps) 9406 Attach

### FC 5044

I/O Bus Expansion Rack (266 Mbps)

**FC 5070**

I/O Expansion Unit (266 Mbps)

**FC 5071**

I/O Expansion Unit (266 Mbps)

**FC 5072**

I/O Expansion Unit (1063Mbps)

**FC 5073**

I/O Expansion Unit (1063Mbps)

**FC 5080**

Storage Expansion Unit (266 Mbps)

**FC 5081**

Storage Expansion Unit (266 Mbps)

**FC 5082**

Storage Expansion Unit (1063Mbps)

**FC 5083**

Storage Expansion Unit (1063Mbps)

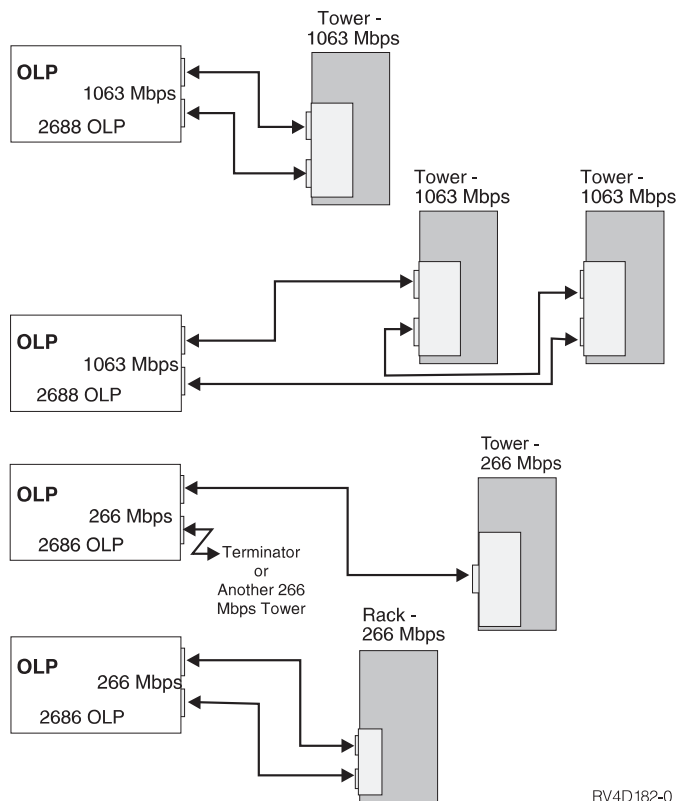
**Note:** For cable information see Table 7 on page 173**Model 7xx, 6xx, and SB1 I/O Bus Expansion Cabling**

Figure 9. Model 7xx, 6xx, and SB1 I/O Bus Expansion Cabling

*Return to the printed instructions or to the page that sent you here.*

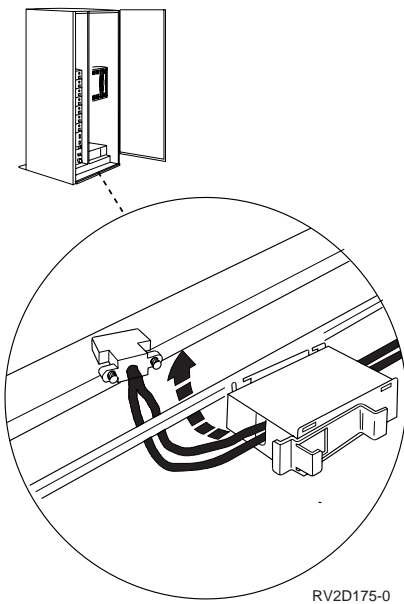
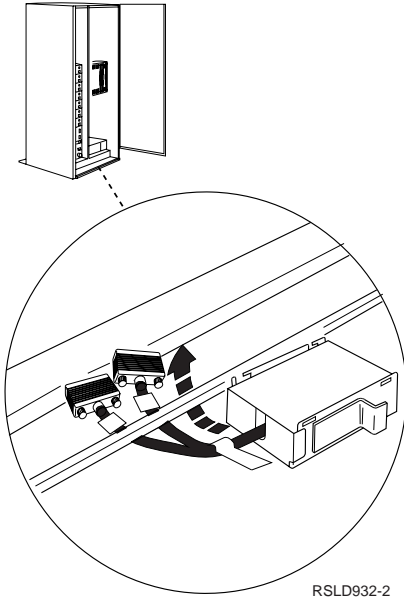
## A108: How to install and connect the adapter cable for a System/370 channel to a card

1. Find the System/370\* channel cables labeled with the FECPP information that is given in the printout. (Help A018 explains FECPP)

(For cable information see Table 7 on page 173).

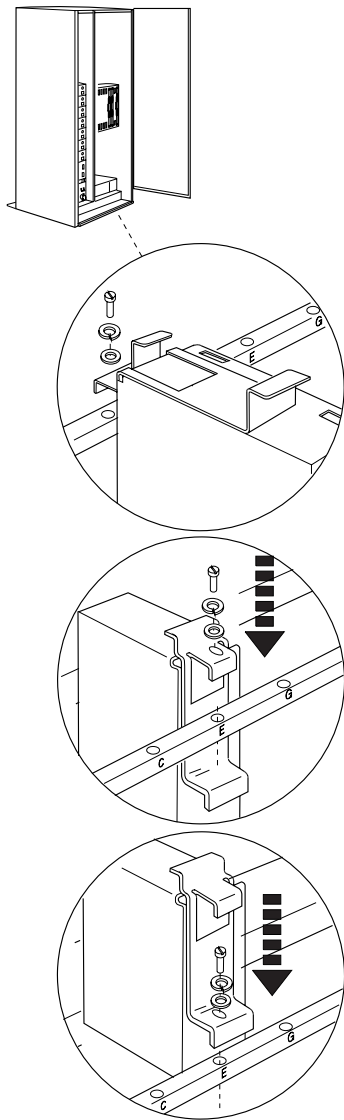
2. Place the loose end or ends of the adapter cable and the breakout box under the bar on the bottom of the rack, as shown.

The assembly could look like either figure in the figures below.



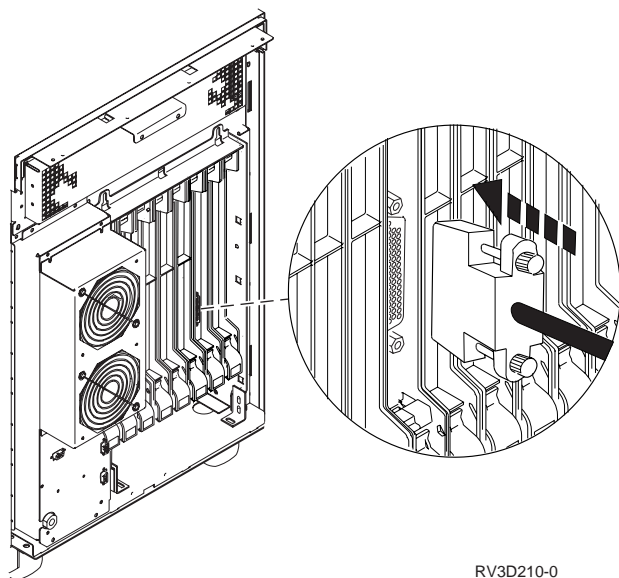
3. Attach the breakout box to the bar, as in the figure below, at the leftmost available position between E and N.

**Note:** The new breakout boxes fasten in either of three positions, shown below. Choose the one that works best for your system.



RV2D169-1

4. Find the specified card in the card enclosure and slot that is given on your printout. (The slot that is specified in the printout may be different than the slot that is shown in these figures.)
  - The following figure shows a 2644 card.



RV3D210-0

Figure 10. Cabling 349X device to FC2644

5. Push the end or ends of the cable into the port or ports on the specified card, as shown.
6. Turn the screws clockwise until they are finger tight.
7. Check that you have the cable fastened tightly.

*Return to the printed instructions or to the page that sent you here.*

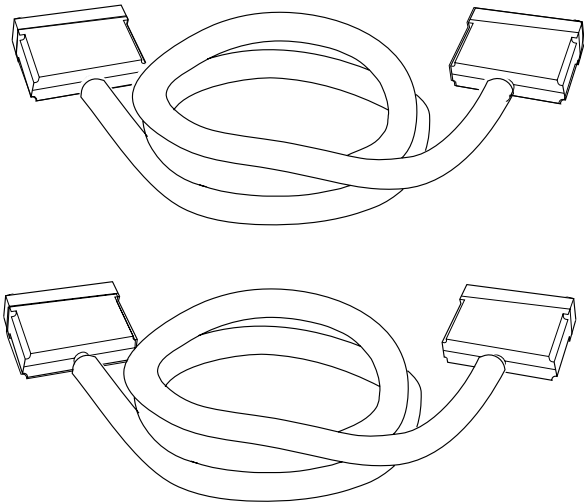
## A109: How to label and connect the System/370 channel cables

1. Find the sheet of cable labels in the shipping group. (Make your own, if labels are not in the shipping group.)



RSLD208-3

2. Find two System/370 channel cables.



System/370 Channel Cables

RSLD1138-2

If you are transferring these cables from a System/38, discard the cable wrap connectors; they do not work on this system.

3.

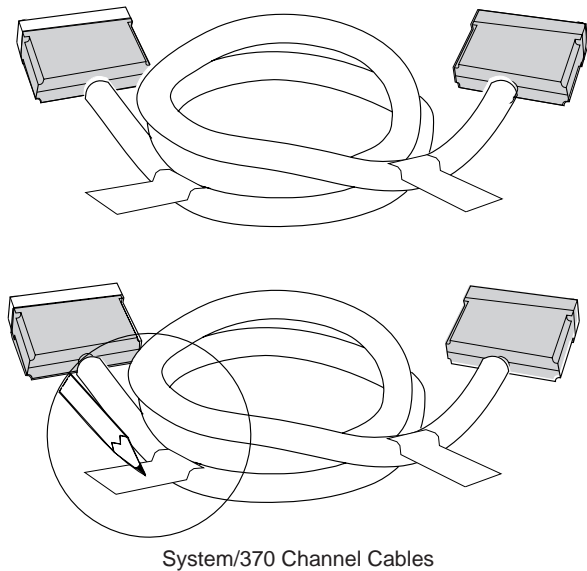
**Notes:**

- a. The 3422/3430/3480/3490 tape units attach to the system through a System/370-type multiplexer channel operating in block multiplex mode. The 3422/3430/3480/3490 tape unit attachment uses only the multiplexer channel functions necessary to attach tape units.
  - b. The System/370-type sequences are specifically for the 3422/3430/3480/3490 tape units. Therefore, the attachment of other System/370 devices is not valid.
4. Fasten one label to each end of each cable.
  5. Write the following on the labels on both ends of one cable:

BUS  
FECPP: xxxxxx

where xxxxxx is the BUS LABEL information. (Help A018 explains FECPP.)

## A109



RSLD928-1

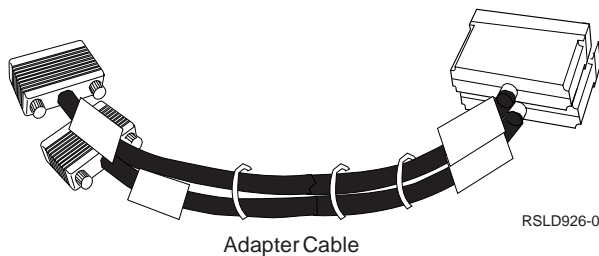
6. Write the following on the labels on both ends of the other cable:

TAG  
FECPP: yyyyyy

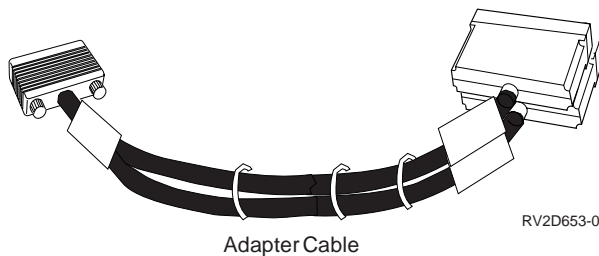
where yyyyyy is the TAG LABEL information.

7. Find the adapter cable with the specified CIN number.

(For cable information see Table 7 on page 173). This cable may look like one of the following figures.



RSLD926-0



RV2D653-0

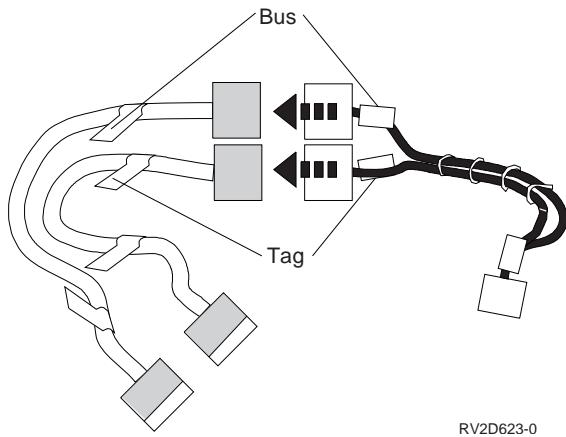
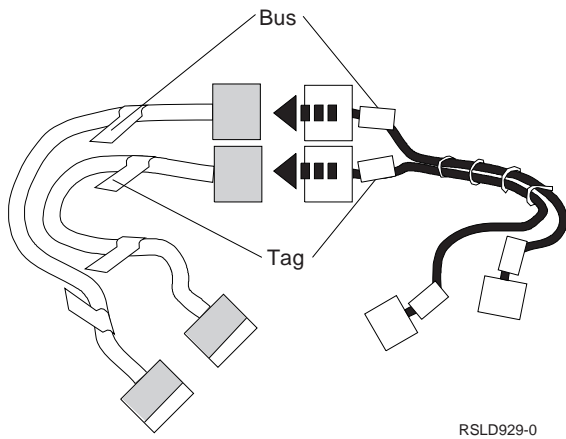
8. Find the end of one of the System/370 channel cables that:
  - Has a **dark gray** connector.
  - Is labeled **BUS**.
9. Connect that end of the System/370 channel cable to the adapter cable that is labeled **BUS**.
10. Find the end of the other System/370 channel cable that:

- Has a **dark gray** connector.
- Is labeled **TAG**.

11. Connect that end of the System/370 channel cable to the adapter cable that is labeled **TAG**.

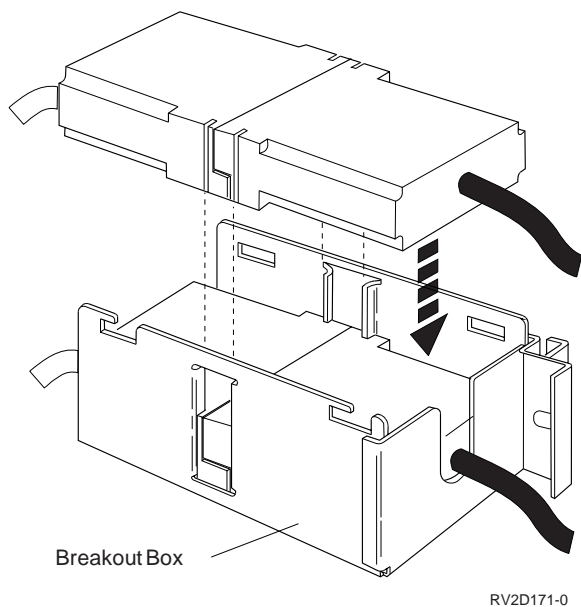
**Note:** For System/370 channel cables, **always** connect a **dark gray** connector to a **light gray** connector.

Your cables should look like one of the following figures.

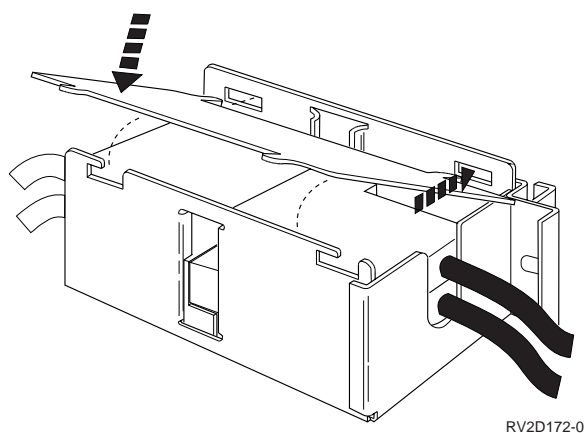


12. Find the breakout box in the shipping group parts. Remove the cover.
13. Place the connectors in the breakout box, as in the figure below.

## A109



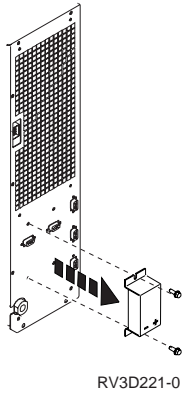
14. Attach the top cover of the breakout box, as in the figure below.



*Return to the printed instructions or to the page that sent you here.*

## A280: How to install the optical SPCN power sequence cables

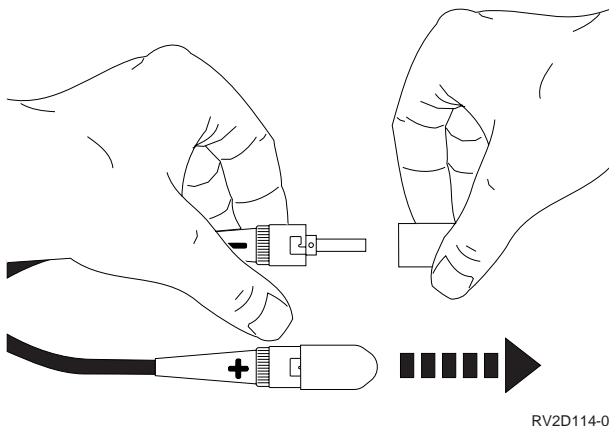
Before working with the optical cables, go to Help A016, "A016: How to handle optical cables" on page 46, and return here.



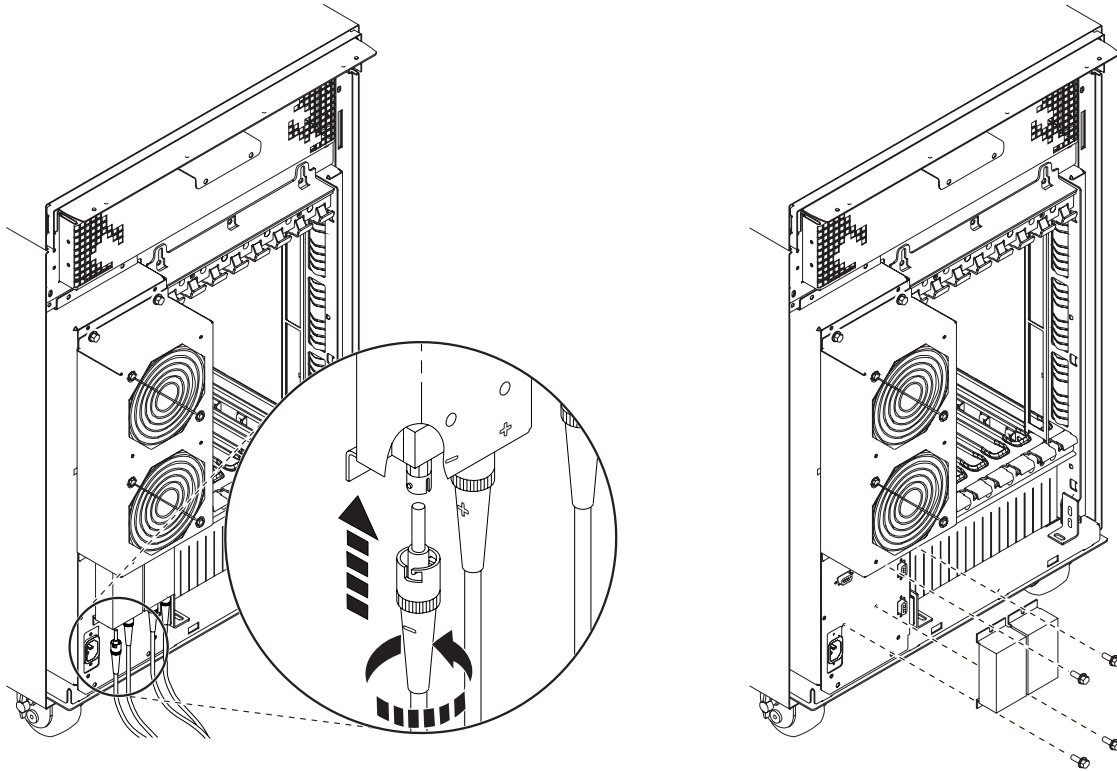
If the system unit expansion or bus extension unit does not have an optical cable converter (shown in figure above) on the specified port (J15 or J16), install one. Go to Help A290, "A290: Working with the SPCN optical adapter and optical Cables" on page 72.

To install the system power control network (SPCN) optical cables for the system:

1. Put the end of the cable under the bar of the rack.
2. Remove the dust covers from the ends of the optical cable. Save them for future use.



3. If cleaning the ends of the optical cables is necessary, follow the instructions in the Fiber Optic Cleaning Kit (IBM part 5453521).
4. Remove the dust covers from the ports on the optical cable converter. Save them for future use.
5. Insert the ends of the cables into the ports on the converter. (Match the symbols on the cables with the symbols on the ports.)
6. To fasten the cables to the converter, align the slots in the cable connectors with the keys on the optical ports, push up, and turn the cable connector clockwise.



RV3B418-1

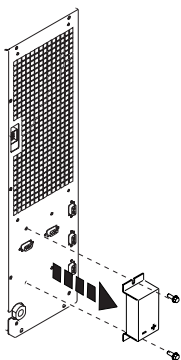
### 3xx/506x Frame

*Return to the printed instructions or to the page that sent you here.*

## A290: Working with the SPCN optical adapter and optical Cables

### SPCN Optical Adapter Removal

1. Ensure that the system is powered off.
2. Disconnect the SPCN optical cable from the SPCN optical adapter you are removing.
3. Remove the two SPCN optical adapter mounting screws and pull the SPCN optical adapter from the power supply.

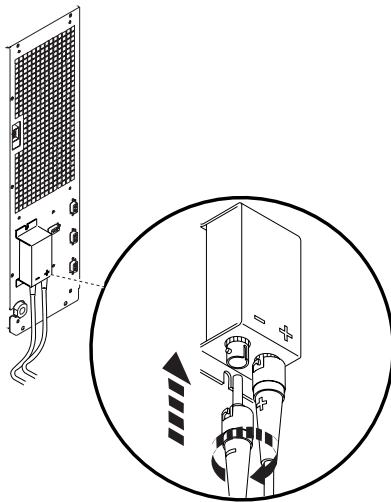


RV3D221-0

4. Install the SPCN optical adapter by reversing the removal process.

#### *SPCN Optical Cable Removal from Adapter*

1. Ensure that the SPCN optical cable ends and the SPCN optical adapter terminals are labeled with + and – such that:
  - the + cable end attaches to the + terminal and
  - the – cable end attaches to the – terminal.
2. Disconnect each cable you want to remove by doing the following:
  - a. Push on the metal ring on the end of the cable as shown.
  - b. Turn the metal ring clockwise as shown.
  - c. Pull on the metal ring until the connector is loose.



RV3D222-0

3. Install the SPCN optical cable by reversing the removal process. (See “Service Referenced Procedures and Information” in the *Problem Analysis Guide* for cable routing information).

**Note:** Ensure that the SPCN optical cable ends and the SPCN optical adapter terminals are attached such that:

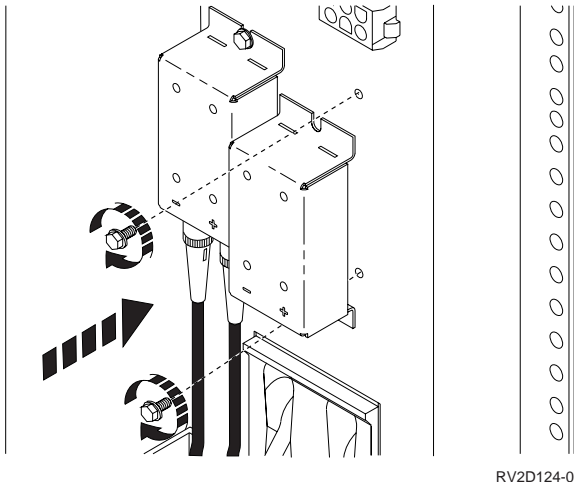
- the + cable end attaches to the + terminal and
- the – cable end attaches to the – terminal.

*Return to the printed instructions or to the page that sent you here.*

## **A293: How to install the optical SPCN RACK power sequence cables**

Before working with the optical cables, see Help A016, “A016: How to handle optical cables” on page 46, and return here.

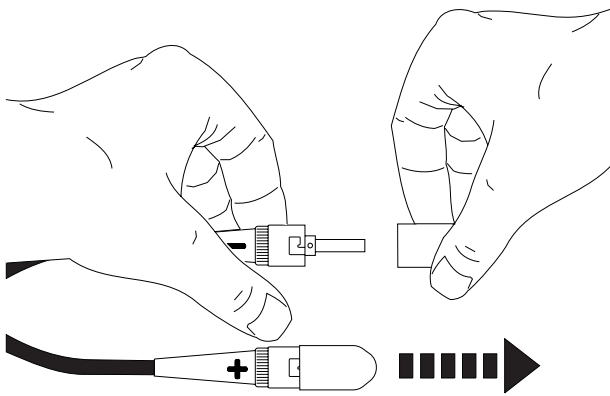
If the rack does not have an optical cable converter on the specified port (J15 or J16), install one, as shown.



RV2D124-0

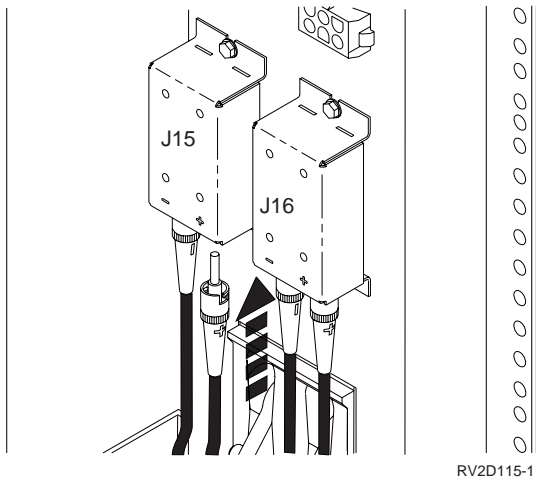
To install the system power control network (SPCN) optical cables for the system, as specified in the list on the printout:

1. Put the end of the cable under the bar of the rack.
2. Remove the dust covers from the ends of the optical cable. Save them for future use.

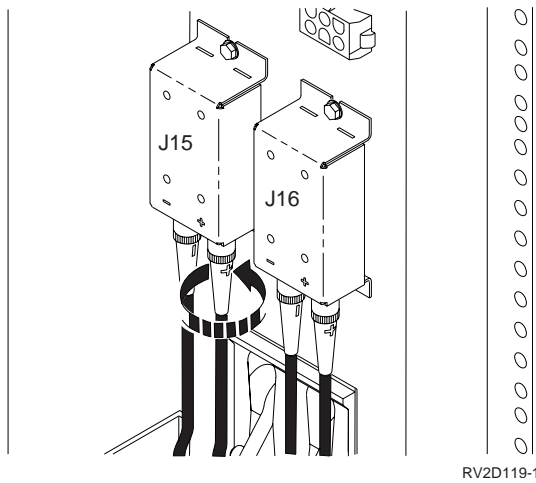


RV2D114-0

3. If cleaning the ends of the optical cables is necessary, follow the instructions in the Fiber Optic Cleaning Kit (IBM part 5453521).
4. Remove the dust covers from the ports on the optical cable converter. Save them for future use.
5. Insert the ends of the cables into the ports on the converter. (Match the symbols on the cables with the symbols on the ports.)



6. To fasten the cables to the converter, align the slots in the cable connectors with the keys on the optical ports, push up, and turn the cable connector clockwise.



*Return to the printed instructions or to the page that sent you here.*

## A321: How to connect the console to a twinaxial workstation attachment

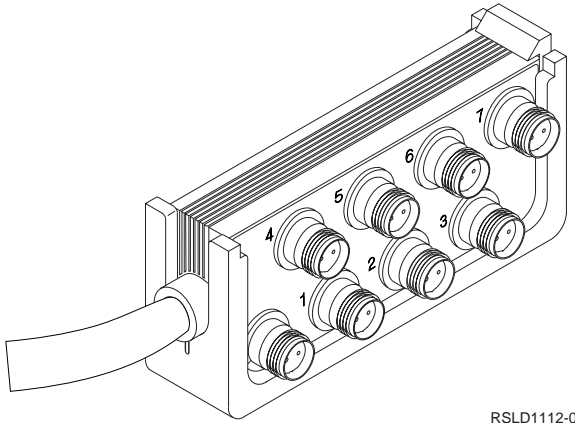
1. Does that attachment look like the following figure?

Yes      No

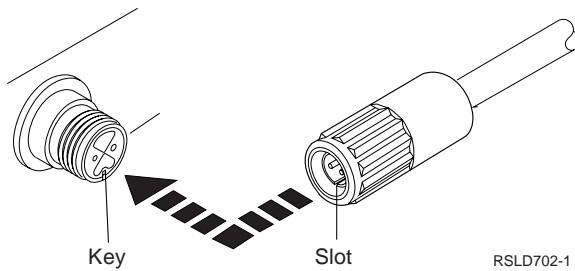


Go to step 4 on page 76.

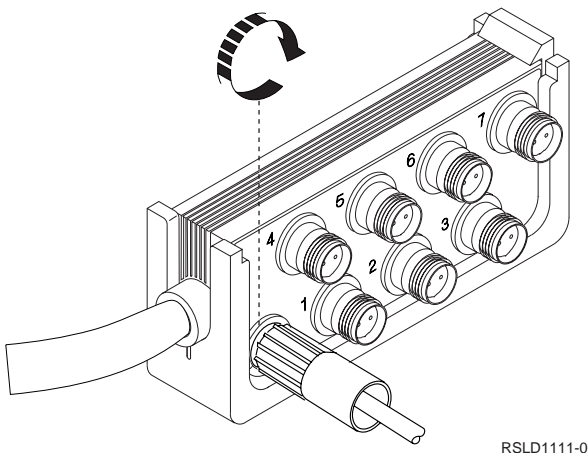
Continue with step 2 on page 76.



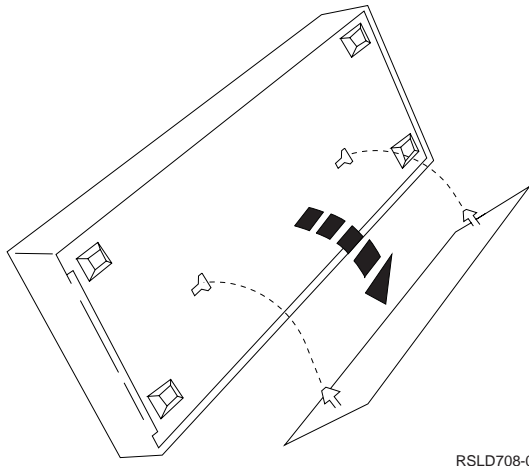
2. Connect the loose end of the twinaxial cable to socket 0.
  - a. Align the slot in the cable connector with the key in the socket, as shown.



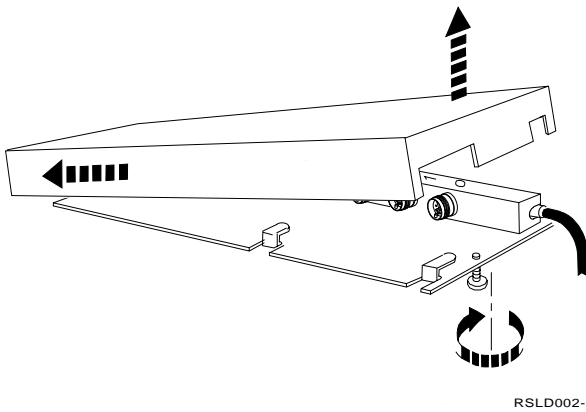
- b. Push the cable connector into the socket and turn the outer ring, as shown.



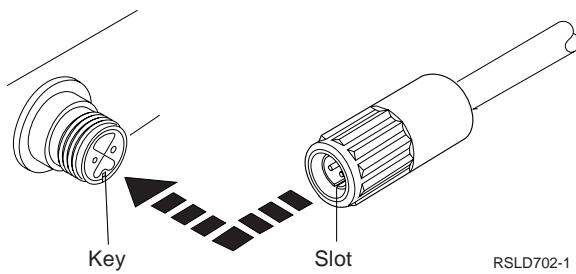
3. Go to step 8 on page 78.
4. A bracket is supplied for the customer to use if the twinaxial workstation attachment is to be mounted to a wall. If the workstation attachment is not be mounted, remove the the bracket as shown.



5. Remove the cover, as shown.

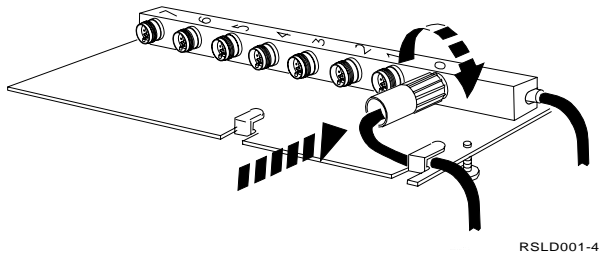


6. Connect the loose end of the twinaxial cable to socket 0.
  - a. Align the slot in the cable connector with the key in the socket, as shown.

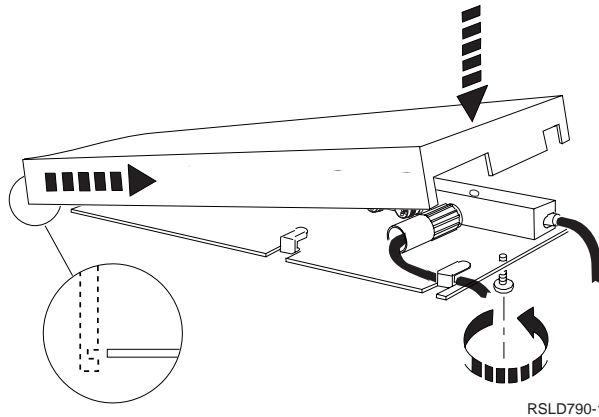


- b. Push the cable connector into the socket and turn the outer ring, as shown.

## A321



7. Reinstall the cover, as shown.



8. Place the twinaxial workstation attachment where it is out of the way.

*Return to the printed instructions or to the page that sent you here.*

## A322: How to prepare and connect the ASCII console

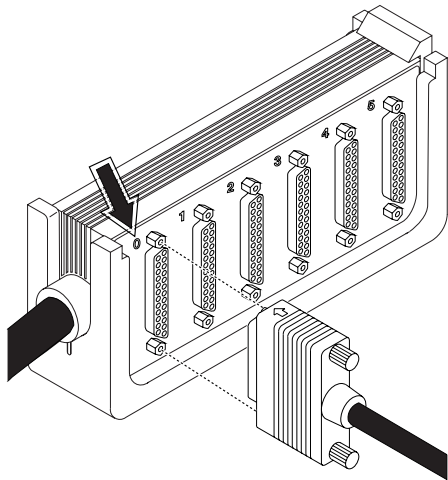
1. Ensure that the following settings are used for the ASCII workstation. If necessary, see Appendix A of the *ASCII Work Station Reference*, SA41-3130-00, or use the manual that came with the device.

**Note:** Ensure that these settings are saved on the workstation. Do not change them.

### ASCII Console Settings

Setup Parameters	Values
Machine code	315X/316X
Operation mode	Echo
Attachment	Direct
Line control	IPRTS
Line speed	19200 bps
Parity	Even
Turnaround character	ETX
Stop bit	1
Word length	8 (bits)

2. **If a customer-supplied cable is used, ensure that it is a direct connection cable.**
3. Align the ASCII cable connector with port 0 on the attachment.



RV2D113-0

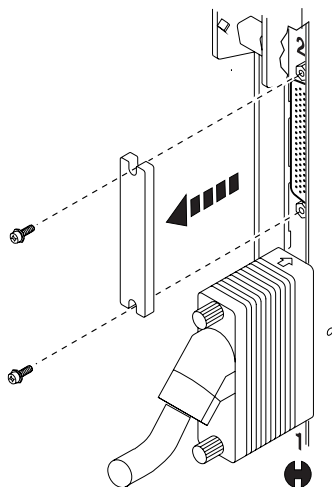
4. Push in and hand tighten the screws on the cable connector.

*Return to the printed instructions or to the page that sent you here.*

## A323: How to connect the ASCII 12-Port Attachment to the FC 6141 ASCII Card

**Attention:** When the 12-Port ASCII attachment is installed, the system must be powered off to prevent damage to the ASCII workstation controller card and to the card enclosure in which the ASCII workstation controller card is installed.

1. Remove the cover from the top connector (2) on the ASCII workstation IOP. Discard the cover.

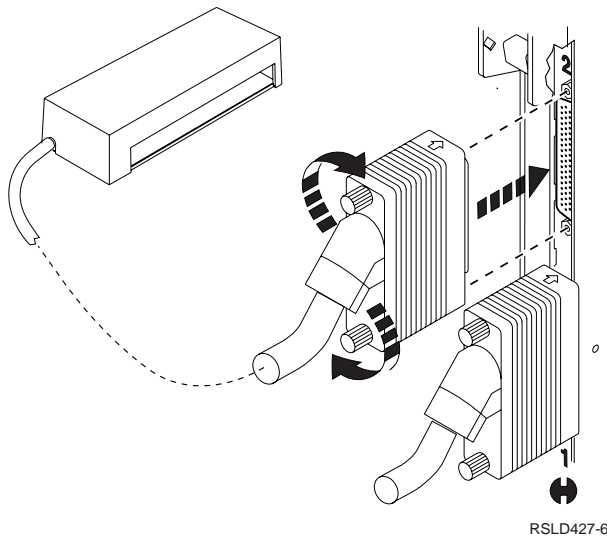


RV2T214-0

2. Align the cable connector with the top connector on the card.
3. Seat the connector and tighten the thumbscrews.

## A323

12-Port ASCII Cable



4. Label the cable. Write the slot number of the card, a slash (/), and the position number of the connector (for example, 4/2 for the system unit or E/4/2 for the expansion unit).

*Return to the printed instructions or to the page that sent you here.*

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## Working with Disk Unit and Tape Unit Kits

### A800: How to Convert a 9406 Model Dxx-Fxx System Unit Rack to a FC 5043 and How to Convert a FC 5040 to a FC 5043 or FC 5044

You are in this instruction to complete a rack conversion. The converted rack will function as the FC 5043 SPCN General Purpose rack or a FC 5044 bus expansion unit rack.

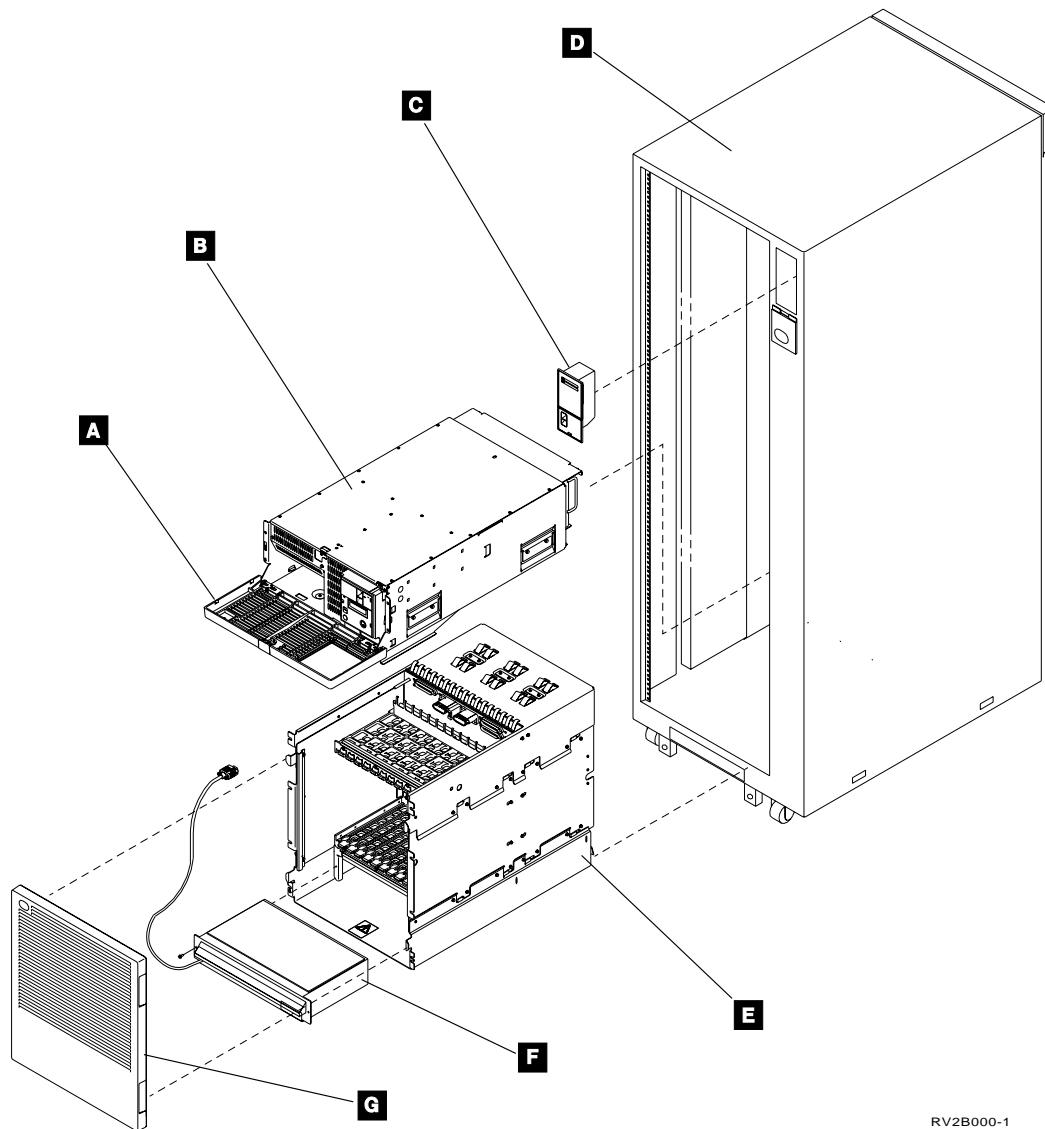
#### CAUTION:

Ensure that all rack-mounted units are fastened in the rack frame. Do not extend or exchange any rack-mounted units when the stabilizer is not installed.  
(RSFTC222)

**Attention:** There should be no rack mounted devices installed above the Support Box while performing the conversion activity.

1. Review the following Rack Unit Locations.

**Note:** Control Panel will vary between Primary and Secondary type racks



RV2B000-1

- A** - Support box cover
- B** - Support Box
- C** - Rack Control Panel
- D** - Rack frame
- E** - Card Enclosure
- F** - Blower
- G** - Card enclosure cover

2. Refer to the 9406 Repair Guide and Parts Listing for the system and go to **Stage 2 System Unit, Extension Unit(FC 5040), and System Unit Expansion (FC 5042)** section.

3. Are you converting a 9406 Model Dxx-Fxx System Unit Rack or FC 5040 to a FC 5043?

Yes      No.

↓      **Go to step 6 on page 82.**

4. Remove the following items from the 9406 System Unit (primary rack) listed:

- a. Support Box

- b. Blower
- c. Card Enclosure
- d. Rack Control Panel

This primary continuous power control panel will be exchanged with a secondary SPCN rack type control panel.

5. **Go to step 7**

6. Remove/Install the following items from the 9309 SC.5040 I/O Unit Rack) listed:

- a. Remove the Support Box
- b. Remove the Blower assembly.

This will be temporary removal to allow exchange of the Card Enclosure.

- c. Remove the Card Enclosure.

This will be temporary removal to allow exchange of the Backplane assembly

- d. Remove and Exchange the Backplane assembly.

- e. Install the Card Enclosure.

- 1) Remove and prepare all non-supported feature cards for MES disposition.

- 2) Exchange the bus adapter (FC 2632) with FC 2684

- f. Install the Blower assembly.

- g. Install the Support Box

- h. Rack Control Panel

This primary continuous power control panel will be exchanged with a secondary SPCN rack type control panel.

- 7. Locate this rack to its designated position prior to installing any devices.
- 8. Ensure the base of the stabilizer is located tightly on the floor.
- 9. Install any device that will be used in the converted rack/frame. Relocating to a different EIA location may be necessary. Install devices starting with EIA 1 Location then any available space for non-Tape devices

**Note:** FC 9347, FC 9348, and FC 5032 Removable Media Cluster must be installed between EIA 11 and EIA 27 locations.

For rack information see section “Supported Rack Configurations” on page 362. in “Appendix C. Configuration Rules for AS/400 Models 170/250/6xx/SB1/7xx” on page 195,

Use the appropriate service documentation for devices that will be installed.

10. **SPCN Cabling**

Go to the “A025: Frame Placement and Frame to Frame Power Sequence Cabling” on page 9 and “A293: How to install the optical SPCN RACK power sequence cables” on page 73.

- 11. The rack conversion is complete.
- 12. Several labels will be provided to identify this new feature rack. Use Figure 11 to affix the labels in specific locations on the FC 5043 or FC 5044 frame.

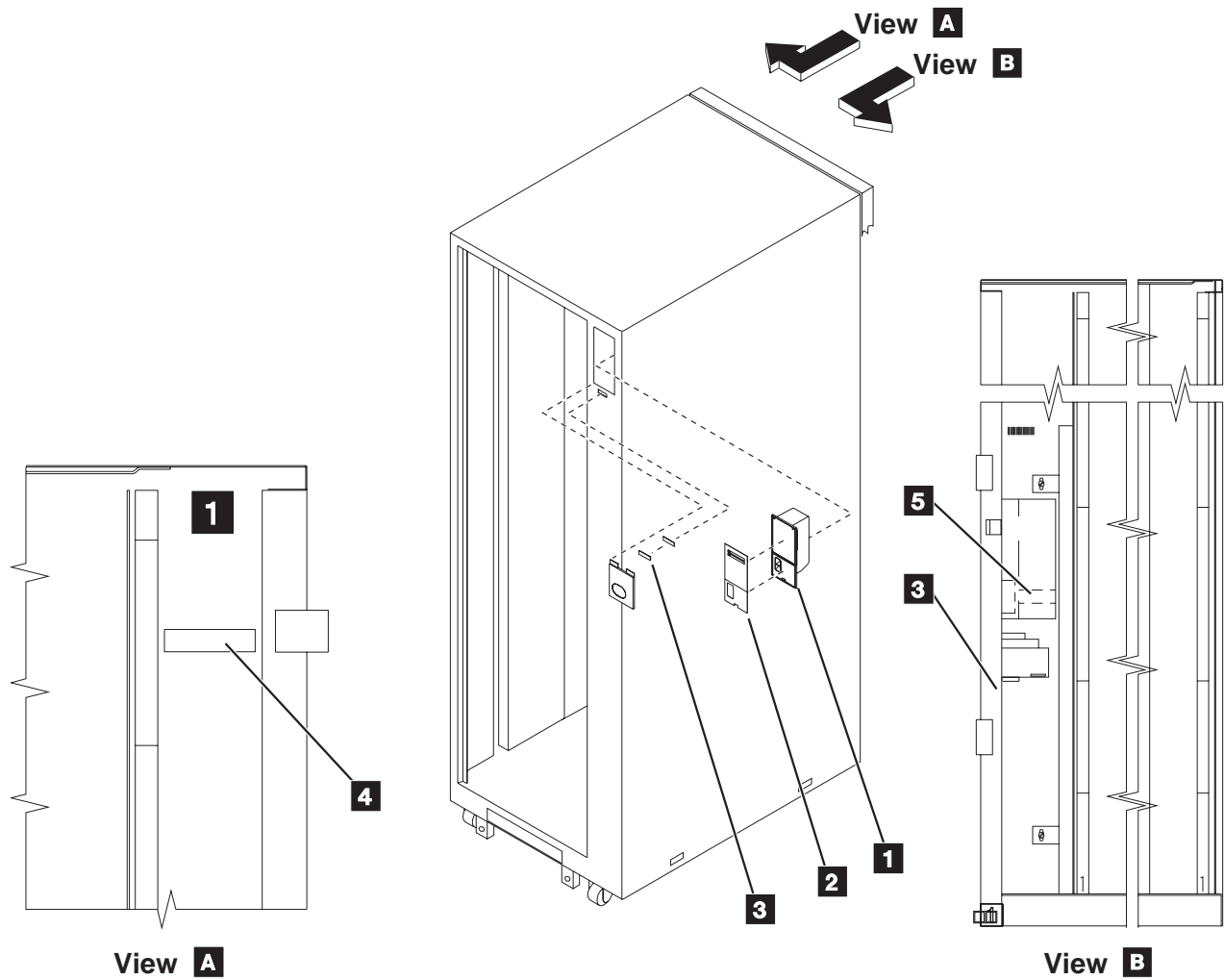


Figure 11. FC 5043, FC 5044 Label Locations

**View A**

Looking from the rear of the rack, it is the right inside panel.

**View B**

Looking from the rear of the rack, it is the left inside panel.

- 1** –Panel Assembly SPCN UEPO (P/N 46F3356)
- 2** –Panel Overlay Label Kit (P/N 86G7809)
- 3** –S/N Label (P/N 86G7786)
- 4** –S/N Label (P/N 86G7787)
- 5** –S/N Barcode–(US P/N 86G7789; IT P/N 86G7788)

*Return to the printed instructions or to the page that sent you here.*

## A806: How to Convert and Migrate Disk Units mounted in a holder for use in hardware using tray style disk unit enclosures

The disk units in the holders used in AS/400 Model 600, 620, 720, and S20 systems can be installed in the disk trays used in AS/400 Model 640, 650, 730, 740, SB1, S30, and S40 systems. The conversion features are kits of parts which allow a customer owned disk unit to be adapted for use on the larger AS/400 systems when they upgrade systems.

### Preparation

Before proceeding with this instruction, verify the following:

1. That the correct conversion kit was shipped:
  - Inspect the disk unit conversion kit to ensure the correct kit is used for this procedure. Damage to disk unit and customer data loss will occur if an incorrect conversion kit is used.
  - Go to Figure 12 on page 86 and see item **H**. All conversion kits are keyed with plastic plugs. Note that there are two holes. The smaller of the two holes will contain a **red** plug because the kit is for **SPCN** system. Do not continue with this procedure if the kit is incorrect for your system.
2. That the customer has a latest set of SAVSYS or SAVSTG tape created with current Operating System/400, Version 3 Release 0 Modification 5 or higher.
3. That if the system is configured for storage protection the customer has a printout of the system auxiliary storage protection disk configuration.

**Note:** If this printout of the customers current disk configuration is not available, do the following to obtain one:

- a. Enter *strsst* to start the system service tools.
  - b. Select the *Work with disk units* option.
  - c. Select the *Display disk unit configuration* option.
  - d. Select the *Display disk configuration status* option.  
Notice which disk units are assigned to each ASP. If a printer is available print the display of the system's disk configuration.
  - e. Exit SST.
4. If the system has checksum protection, it is recommended that the customer stops checksum protection before proceeding with the disk unit conversion and migration.

Refer the customer to the *Backup and Recovery*, SC41-5304-04, for details when working with the mirrored and checksum protection.

### Disk unit conversion procedure

**Attention:** The disk enclosure and logic card are sensitive to electrostatic discharge. The following procedure **MUST** be performed on the ESD protected work surface. Ensure that you wear an ESD wrist strap that is connected to the work surface. The ESD wrist strap is supplied in the ESD handling kit, IBM P/N 6428316.

**Do not hold or apply pressure to the disk enclosure cover.** This can cause the disk enclosure cover to touch and damage the disk inside.

A recommended list of tools to do the conversion:

Torx\*\* 10 wrench

7MM wrench

5.5MM wrench

5MM wrench

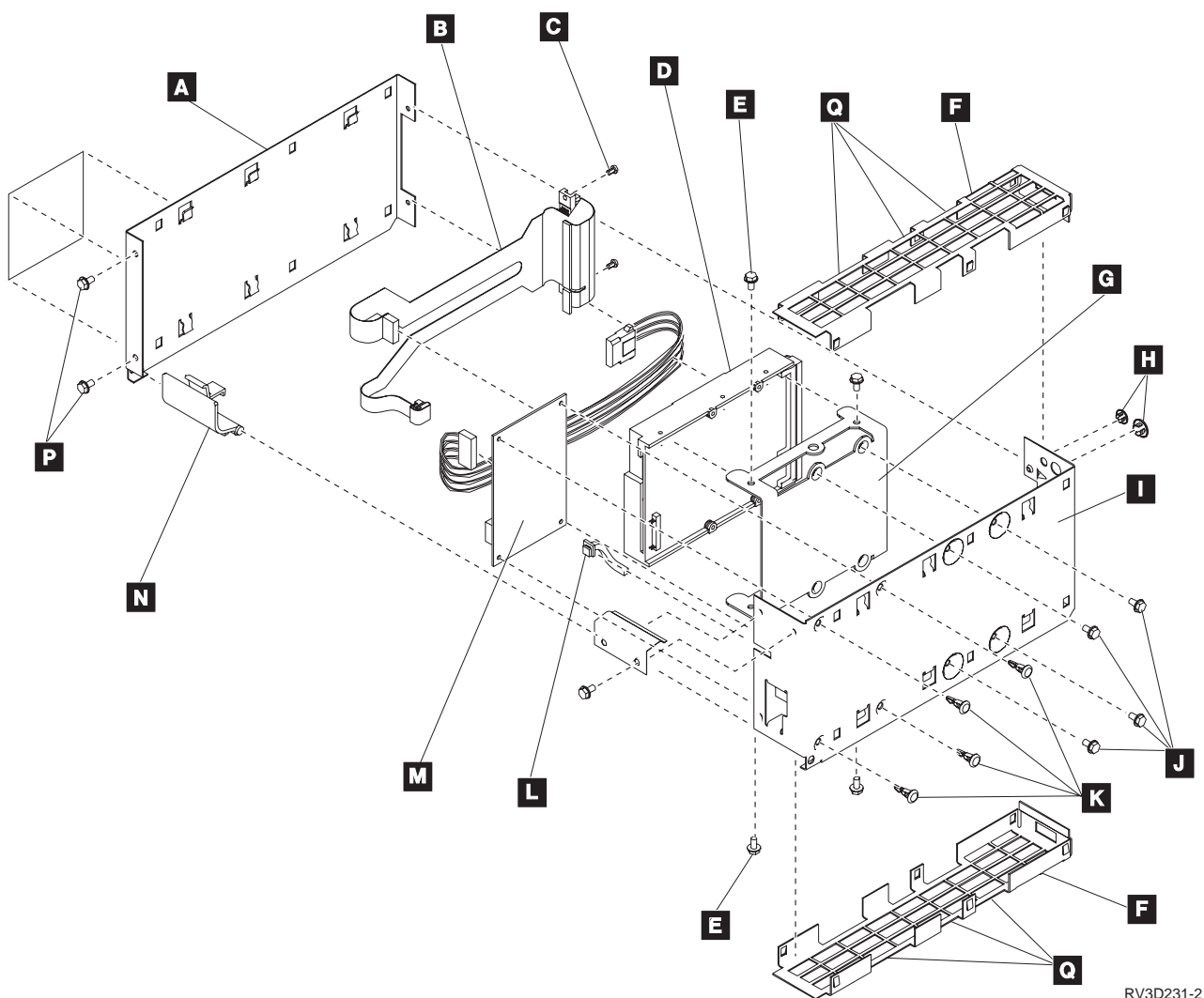
## Conversion Details

### Removing the disk unit from the disk unit holder

1. Remove the power and signal connectors from the disk unit.
2. Remove the four screws holding the disk unit to the holder.
3. Slide the disk unit up and out of the holder.

### 4. Installing the disk unit into the disk unit tray

- The conversion kit will consist of a disk unit tray assembly.
  - The disk unit conversion kit hardware will be shipped assembled minus a disk unit.
  - The disk tray assembly will be taken apart to allow the installation of the disk units being migrated.
5. Figure 12 on page 86 shows an exploded view of the disk unit assembly hardware to convert the 660x and 67xx disk unit types. The tray assemblies will be labeled with the conversion feature code.



RV3D231-2

Figure 12. Disk unit tray assembly to convert the 660x and 67xx disk types.

6. As you begin to convert the disk hardware:
  - Ensure that you are using a flat surface to work on.
  - Ensure all work with the disk unit should be on the ESD mat to prevent damage.
  - Ensure all hardware other than the disk enclosures/logic card assemblies that were removed from the 9404 or 9406 are set aside and away from the ESD mat.
7. Find the new disk unit assembly. Use Table 4 on page 89 and verify that you have the correct assembly for the type of disk unit being converted.
8. Remove the top and bottom shield covers **F** of the new disk unit assembly by doing the following:
  - a. If the tray style you are using has side screws, loosen the screws **C**.
  - b. If the tray style you are using has side screws, loosen the screws **P**.
  - c. Insert the tip of a flat blade screwdriver at points **Q**.
  - d. Rotate the screwdriver to push the shield cover **F** away from the disk carrier assembly cover **A** and the tray **I**.
  - e. Repeat steps 8c and 8d to remove the other shield cover.

9. Separate the disk carrier assembly cover **A** from the tray **I** by removing 4 screws:
  - 2 hex screws **P**.
  - Move latch **N** to open position to access one of the screws.
  - 2 Torx screws **C** at the SCSI Connector end.

**Set the screws aside for they will be used later in step 18 to reassemble the tray assembly.**

10. Before removing the blue latch **N**, note its installed position between the pivot holes that are on the disk carrier assembly cover and tray.
11. Set the disk carrier assembly cover and blue latch aside.
12. Place the tray **I** on the ESD mat on its side with the card and cables facing away from you.

**Attention:** Do not touch the circuit cards on the disk unit.

13. Connect the power/address cables from the card assembly **M** and the flex-type SCSI cable **B** to the disk unit **D**.
14. With one hand hold and align the disk unit **D** with the tray.
15. Find the screws from steps 51 on page 104 and 53 on page 105 (9406 280x disk unit removal) or step 24 on page 95 (9404 disk unit removal).

These screws will be used to mount one disk unit **D** :

Use the four screws **J** to fasten to tray.

If the tray style you are using has side screws, use the four screws **E** to fasten disk unit to mounting bracket **G** (This bracket will already be attached to the tray with 4 screws **J**)

16. Take the disk unit assembly cover **A** align it with the tray **I**.
17. Place the 'blue latch' **N** in its original installed position in pivots holes.
18. Use the 4 screws that were removed in step to fasten the disk unit assembly cover to the tray assembly:
  - 2 hex screws **P** at the 'blue latch' end
  - Keep the latch in its open position to fasten the screw.
  - 2 Torx screws **C** at the 'SCSI Connector' end
19. Take each shield cover **F** that was removed in step 8 on page 86 and carefully align it between the disk unit assembly cover **A** and tray **I**. Press each end of the shield cover into place with the palms of your hand.  
Repeat this step for the other shield cover.
20. The disk unit tray assembly is complete.

Label disk units assemblies with new CCIN and new Feature Code with labels provided. Use Table 4 to determine which label you should use for each disk unit tray assembly.

21.

**Attention:** Do not install a disk unit kit with the keyed plugs **H** removed.  
Damage to disk unit and customer data loss will occur.

22. How to determine where to locate and install the disk unit tray assembly.

The disk unit can now be integrated into the Model 6xx/SB1 hardware. Now you will determine where to install the disk unit assembly.

**Notes:**

- a. When installing disk units, the system unit should be populated first. Then positions in the disk expansion units and disk storage expansion towers.
- b. If auxiliary storage protection is configured, for example, mirrored protection, or parity protection, have the customer review the *Backup and Recovery*, SC41-5304-04 .
- c. If the disk unit was unit 1 (Load Source) , it should have been labeled with the type of disk and "Unit 1" during its removal.
- d. **If a unit 1 (load source) is being migrated as the load source for the new system, it MUST be installed in the disk location L01 of the 6xx or SB1 System Unit.**

**Note:** If a unit 1 (load source) is being converted but will not be the load source for the new system, the Load Source Utility can be used to restore the data on the new load source. Follow the printed instructions regarding the Load Source Utility and the installation of the load source units (Old and New) during the running of this utility. After the Load Source Utility has completed go to step 83 on page 110.

- e. Disk units that were converted are not allowed in the disk unit position F8 and are not allowed positions K8 through K16 of FC 505x.
23. Use the System Unit or Expansion Unit diagrams to select new disk unit positions.
24. Install the disk units.

*Return to the printed instructions or to the page that sent you here.*

## A810: How to Convert and Migrate 940x Cxx-Fxx Integrated Disk Units for use in Model 6xx/SB1/7xx System Hardware

The AS/400 9404 Cxx-Fxx and 9406 Dxx-Fxx integrated disk units can be converted. The conversion features are kits of parts which allow a customer owned disk unit to be adapted for use on the 940x Model 7xx, 6xx and SB1 systems. The conversion can only be done when a customer is upgrading from the 9404 Cxx-Fxx or 9406 Dxx-Fxx to the 940x Model 7xx, 6xx and SB1 system.

### Preparation

**Attention:** Do not install a disk unit kit with the keyed plugs **H** removed. Damage to disk unit and customer data loss will occur.

Before proceeding with this instruction, verify the following:

1. That the correct conversion kit was shipped:
  - Inspect the disk unit conversion kit to ensure the correct kit is used for this procedure. Damage to disk unit and customer data loss will occur if an incorrect conversion kit is used.
  - Go to Figure 14 on page 107 and Figure 15 on page 108 see item **H** . All conversion kits are keyed with plastic plugs. Note that there are two holes. The larger of the two holes will contain a **white** plug if the kit is for a

**Non-SPCN** system. The smaller of the two holes will contain a **red** plug if the kit is for **SPCN** system. Do not continue with this procedure if the kit is incorrect for your system.

2. That the customer has a latest set of SAVSYS or SAVSTG tape created with current Operating System/400, Version 3 Release 0 Modification 5 or higher.
3. That if the system is configured for storage protection the customer has a printout of the system auxiliary storage protection disk configuration.

**Note:** If this printout of the customers current disk configuration is not available, do the following to obtain one:

- a. Enter strsst to start the system service tools.
- b. Select the *Work with disk units* option.
- c. Select the *Display disk unit configuration* option.
- d. Select the *Display disk configuration status* option.

Notice which disk units are assigned to each ASP. If a printer is available print the display of the system's disk configuration.

- e. Exit SST.
4. If the system has checksum protection, it is recommended that the customer stops checksum protection before proceeding with the disk unit conversion and migration.

Refer the customer to the *Backup and Recovery*, SC41-5304-04, for details when working with the mirrored and checksum protection.

### Disk unit conversion procedure

This procedure is to remove the 9404 and 9406 integrated disk units and convert them for use in the new Systems as **single disk units housed in a new carrier assembly**.

The following table will identify which disk units are allowed to be converted and the kit required to perform the migration.

*Table 4. Supported Integrated Disk Unit Conversion Kits. (See Note 2). Migration to AS/400 940x Model 6xx/SB1/7xx single disk unit assembly.*

AS/400 Disk Feature ( <i>Capacity</i> )	Number of Kits Required	Model CCIN Note <sup>1</sup>	Single Disk Capacity	Kit For 640, 650, S30, S40, SB1 Systems <sup>3</sup>	Kit For 600, 620, S10, S20 Systems <sup>3</sup>
6602 (1.0GB)	1	6602 <sup>2</sup>	1.03GB	1602	1319
2802 (2.0GB)	2	6602 <sup>2</sup>	1.03GB	1602	1312
6603 (2.0GB)	1	6603 <sup>2</sup>	1.96GB	1603	1313
6605 (2.0GB)	1	6605	1.03GB	6605	1325
6606 (2.0GB)	1	6606	1.96GB	6606	1326
6650 (1.0GB)	1	6603	1.03GB	6650	1323
6607 (4.0GB)	1	6607	4.19GB	6607	1327
6713 (8.0GB)	1	6713	8.58GB	6713	1333
6906 (2.0GB)	1	6606	1.98GB	6906	1336
6907 (4.0GB)	1	6607	4.19GB	6907	1337

#### Notes:

1. CCIN is the number that the devices will report to the system.

2. Device Parity requires these devices to be in 522 byte format. Devices moved from Model D/E/Fxx to Model 6xx/SB1/7xx will require formating in order to have parity protection. See "Parity Set Restrictions on Devices" on page 351 and *DASD migration to HA Controller in* in "Device Parity Protection" on page 349.
3. These feature codes will ship migration kits only for use with customer supplied disk units.

**Attention:** The disk enclosure and logic card are sensitive to electrostatic discharge. The following procedure **MUST** be performed on the ESD protected work surface. Ensure that you wear an ESD wrist strap that is connected to the work surface. The ESD wrist strap is supplied in the ESD handling kit, IBM P/N 6428316.

**Do not hold or apply pressure to the disk enclosure cover.** This can cause the disk enclosure cover to touch and damage the disk inside.

**For tape unit conversions, follow the printed instructions and HELP A820.**

A recommended list of tools to do the conversion:

Torx\*\* 10 wrench  
 7MM wrench  
 5.5MM wrench  
 5MM wrench

### Conversion Details

1. Is the system powered off?

**No.      Yes**

↓

**Go to step 10**

2. Verify with the customer that no interactive jobs are running.
3. Can you enter commands from the system console or a system workstation that is near the AS/400 system unit?

**Yes      No**

↓

**Go to step 7.**

4. Are you using dedicated service tools (DST)?

**Yes      No**

↓

At the command line, type:  
 pwrdownsys \*immed

Then press the Enter key.

**Go to step 9 on page 91.**

5. Attempt to switch off power to the system using DST by doing the following:
  - a. Select the *Start service tool* option on the Use Dedicated Service Tools (DST) display.
  - b. Select the *Power Off the system* option.
6. Does the Power On light go off?

No      Yes

↓      **Go to step 9.**

7. Go to the control panel of your system.
8. On the control panel of your system, push the Power switch down to the Delayed Off position.
9. Check for the Power On light to go off.

**Note:** If you are working on a 9406 system with racks, ensure that the rack power ready light on each rack goes out.

10. Are you migrating disk units from a 9404 system?

Yes      No

↓      Go to step 37 on page 100 to remove 9406 280x internal disk units.

#### 11. **9404 Disk Unit Removal**

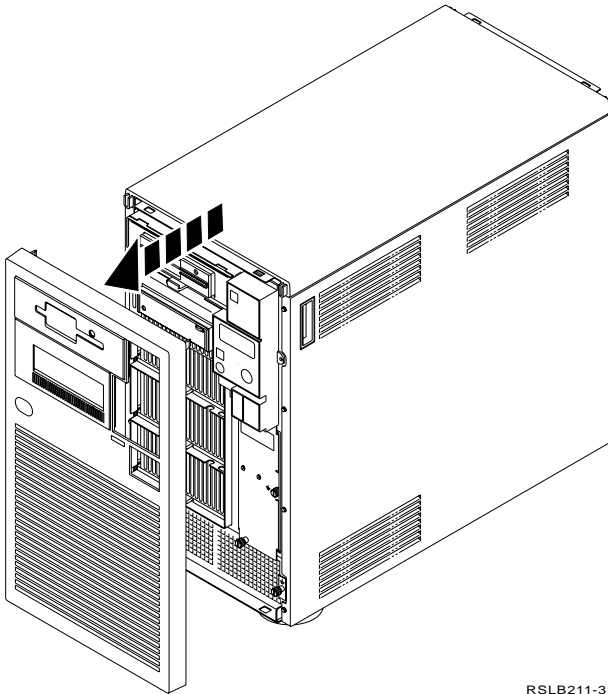
You are at this step to remove the 9404 disk field-replaceable units (FRUs) from the system unit or expansion unit or disk expansion unit.

**Attention:** The disk enclosure and logic card are sensitive to electrostatic discharge. The following procedure **MUST** be performed on the ESD protected work surface. Ensure that you wear an ESD wrist strap that is connected to the work surface. The ESD wrist strap is supplied in the ESD handling kit, IBM P/N 6428316.

Do not hold or apply pressure to the disk enclosure cover. This can cause the disk enclosure cover to touch and damage the disk inside.

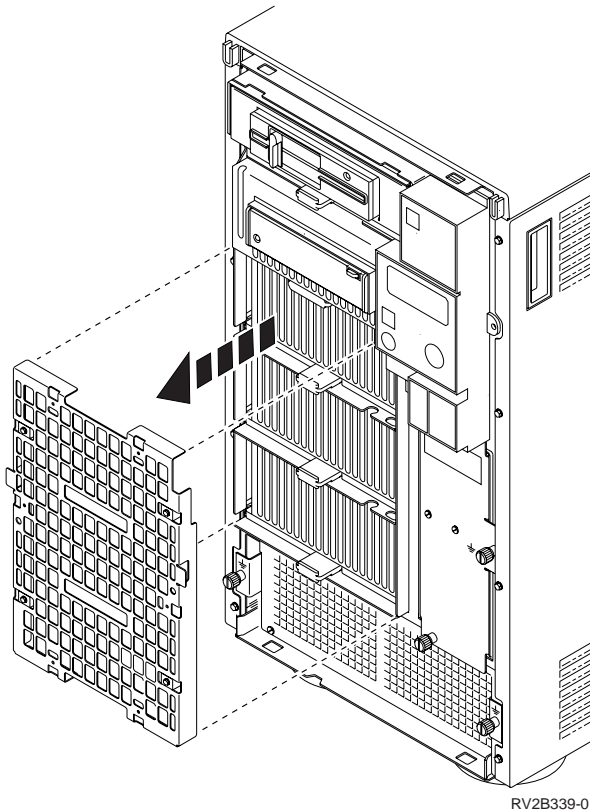
**Attention:** Failure to follow the order of steps in these procedures may cause damage to the 9404 disk units.

12. Grip the cover on each side near the top and pull toward you.
13. When the top clips release, lift up the cover until the bottom clips clear the slot in the frame.



RSLB211-3

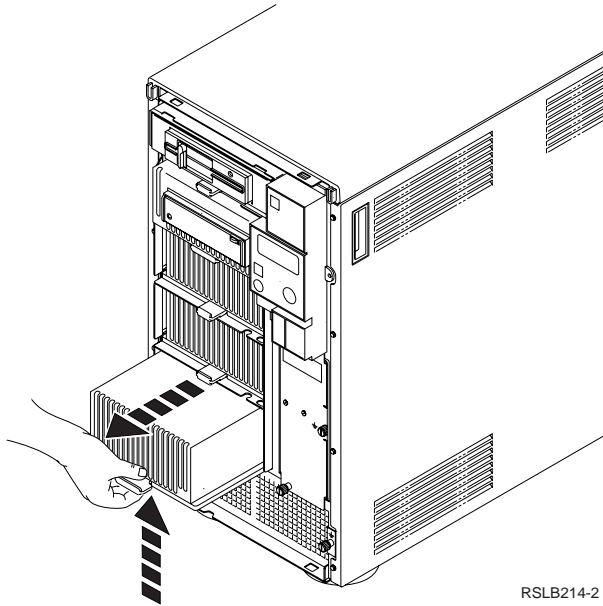
14. Hold the disk shield by the edges and pull until it comes off the frame.



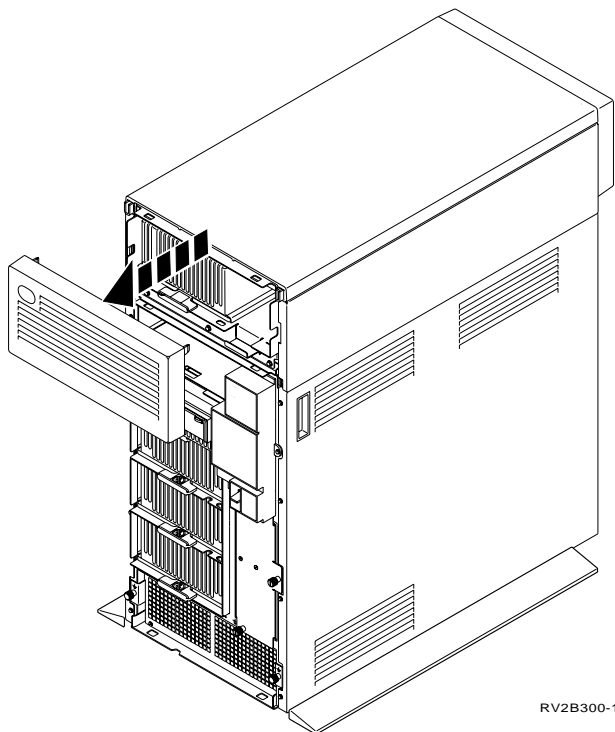
RV2B339-0

15. Lift up on the disk unit carrier tab to release it from its latch.
16. To disconnect the disk unit, pull out on the tab to slide it 76 mm (3 inches) out of the frame.

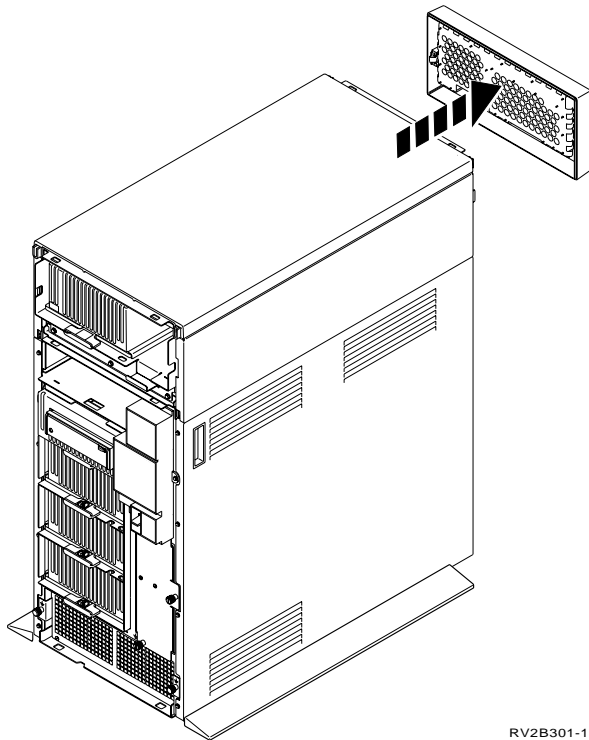
17. To remove a disk unit carrier assembly, pull out on the tab to slide it out of the frame.



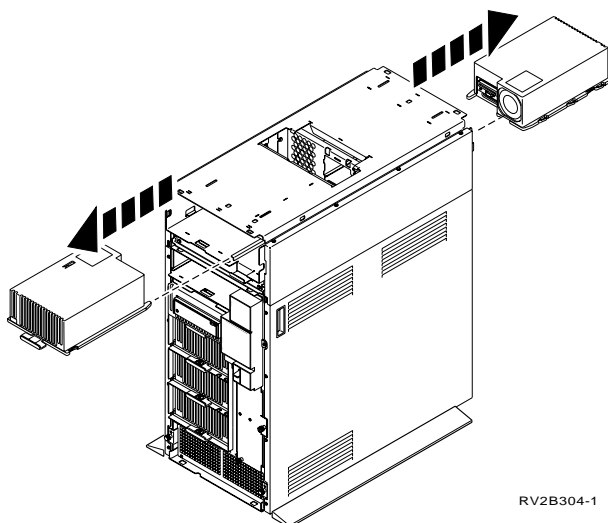
18. If the system has a disk expansion unit attached, continue with the next step. If the system does not have a disk expansion unit attached, go to step 22.
19. To remove a disk unit carrier assembly from the disk expansion unit, remove the front disk expansion unit cover. Hold the cover by the edges and pull until the cover comes off the frame.



20. Remove the back disk expansion unit cover. Hold the cover by the edges and pull until the cover comes off the frame.



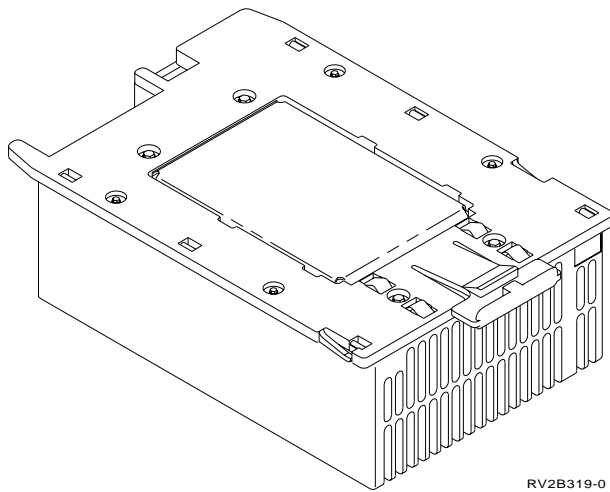
21. Remove the front and back disk units from the disk expansion unit. Lift up on the carrier tab to release it from its latch, and pull out on the tab to slide the disk unit out of the frame.



22. Using the blank label provide in the MES ship group, label all disk units with disk unit location, disk unit number and disk type.

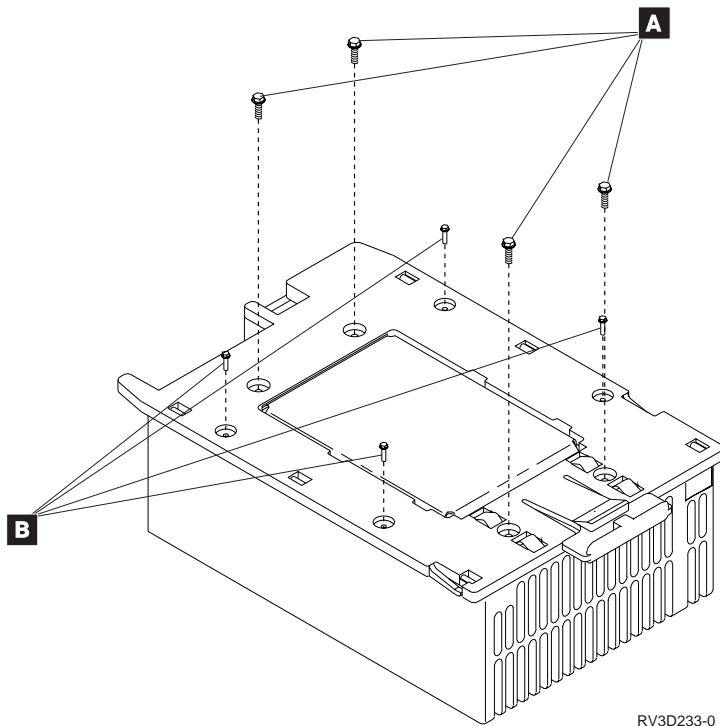
**Note:** To verify the disk type, look at the manufacturer label on the right side of the disk unit assembly. The label identifies disk unit feature code.

23. Place the disk unit top side down.



RV2B319-0

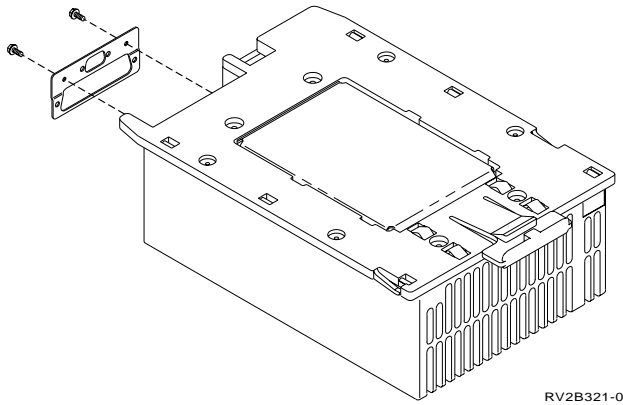
24. Remove the 4 screws **A** that hold the base plate to the disk drive assembly, and the four screws **B** that hold the base plate to the cover assembly.  
**Do not discard the screws. These screws will be used in step 71 on page 109.**



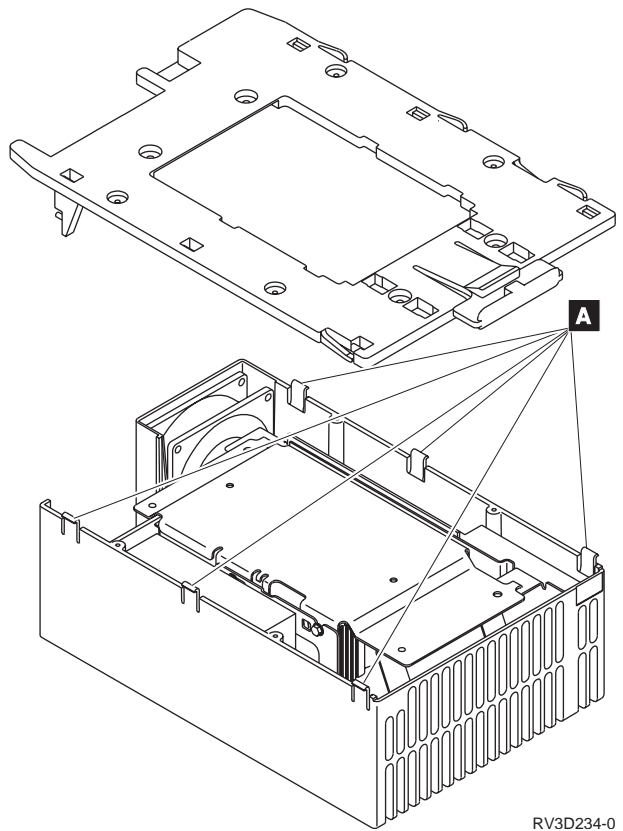
RV3D233-0

25. Remove the cable retainer plate by removing the two screws that hold it to the cover assembly.

## A810



26. Remove the base plate from the cover assembly by doing the following:
- Using a flat blade screwdriver, press inward on each catch tabs **A**. Rotate the screwdriver while lifting the base plate to expose the internal parts of the assembly.
- Do one side at a time.



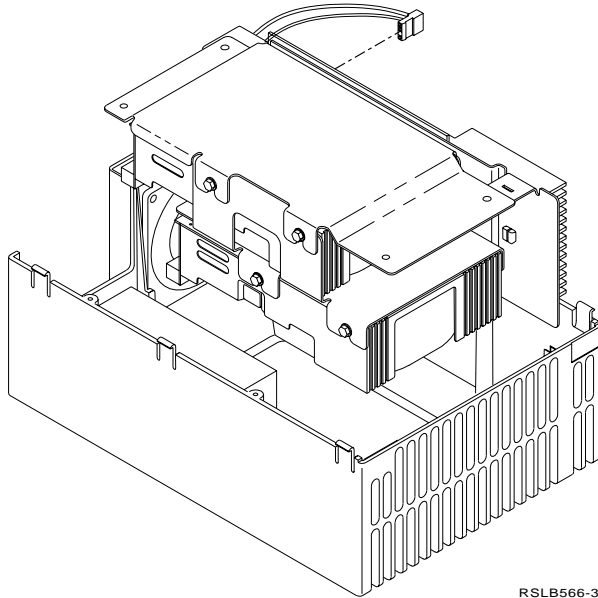
27. Is the disk you are working with type number 6602 or 6612?

No      Yes

↓      Go to step 33.

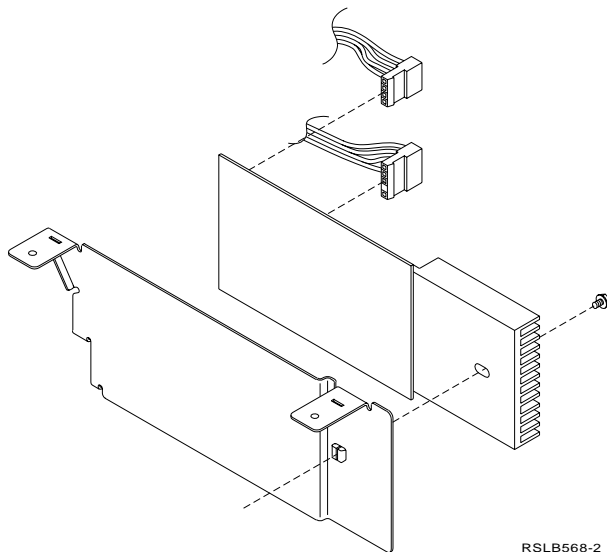
28. Remove the assembly holding the disk drives and regulator card from the cover assembly by doing the following:

- a. Lift the complete assembly until you can unplug the fan cable from the regulator card.
- b. Remove the assembly holding the disk drives and regulator card from the cover assembly.

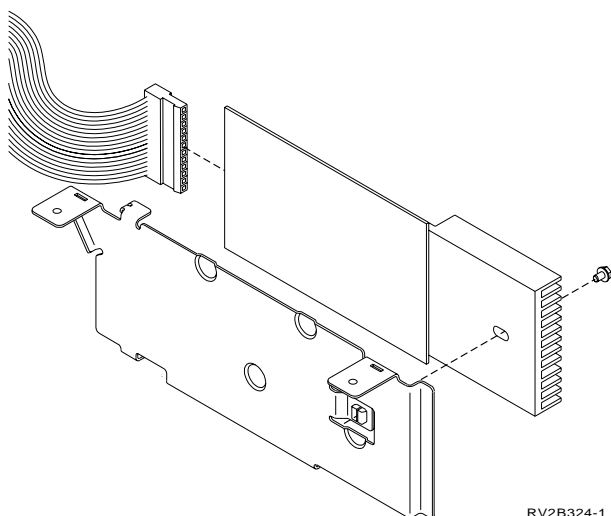


RSLB566-3

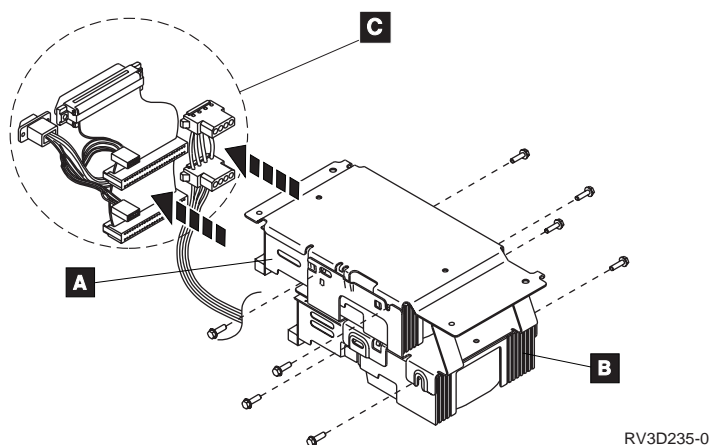
29. Remove the regulator card by doing the following:
- a. Remove the cables from the regulator card.
  - b. Remove the regulator card and metal shield assembly.



RSLB568-2



30. To separate a disk drive from its holding bracket, do the following:



- Remove all cables **C** from the disk drives.
- Remove the four screws that hold each disk drive to the bracket.
- Pull the disk drives from the bracket.

**Notes:**

- The disk drive assembly is shown bottom side up in the figure. Drive A is shown by **A** and drive B is shown by **B** in the figure.
- If the disk unit that you are working on contains only one disk drive, position **B** is filled with foam.
- If drive A **A** is the load source, label it as 'unit 1' for possible later use. (This load source may migrate as the load source for the new system).

31. Do you have more disk units to remove?

Yes      No



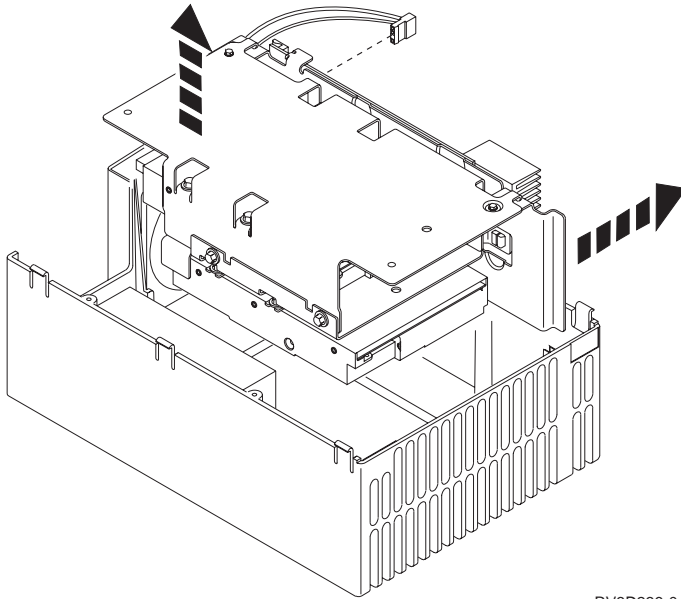
Go to step 57 on page 105.

32. Repeat the removal procedure starting at step 23.

33. Disk Unit Type 6602/6612 Removal

Remove the assembly holding the disk drives and regulator card from the cover assembly by doing the following:

- a. Lift the complete assembly until you can unplug the fan cable from the regulator card.
- b. Remove the assembly holding the disk drives and regulator card from the cover assembly.

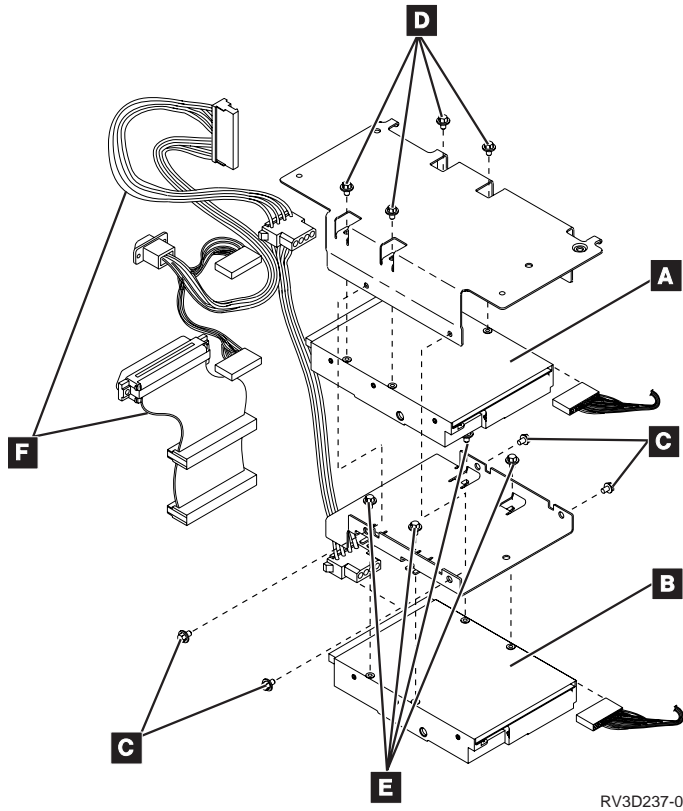


RV3D236-0

34. Remove the regulator card by doing the following:
  - a. Remove the cable from the regulator card.
  - b. Separate the regulator card/metal shield assembly the disk unit mounting bracket.
35. If drive A **A** is the load source, label it as 'unit 1' for possible later use. (This load source may migrate as the load source for the new system).
36. To separate a disk drive from its holding bracket, do the following:
  - a. Remove all the cables **F** from the disk drives. Set the cables aside and away from the ESD mat.
  - b. Remove the four screws **C** that hold the two brackets together.
  - c. Remove the screws **D** that hold disk drive **A** to the bracket.
  - d. Lift the bracket. Set the bracket aside and away from the ESD mat.
  - e. Lift disk unit A **A** and carefully place it on the ESD mat.
  - f. Remove the 4 screws **E** that holds disk unit B **B** to the bracket.
  - g. Lift the bracket. Set this bracket aside and away from the ESD
  - h. Carefully place disk unit B on the ESD mat.

The disk drive assembly is shown bottom side up in the figure. Drive A is shown by **A** and drive B is shown by **B** in the figure.

If the disk unit that you are working on contains only one disk drive, position **B** is filled with foam.



Go to 57 on page 105.

### 37. 9406 Internal Disk Unit (280x) Removal.

You are at this step to remove the 9406 280x disk field-replaceable units (FRUs) from the 280x card.

**Attention:** Failure to follow the order of steps in these procedures may cause damage to the 280x disk units.

**Attention:** Do not turn the 280x card over with the cover removed. Always place the card as shown in the figures. If you turn the 280x card over with the cover removed, small fragments of metal may fall from the screw holes and cause short circuits.

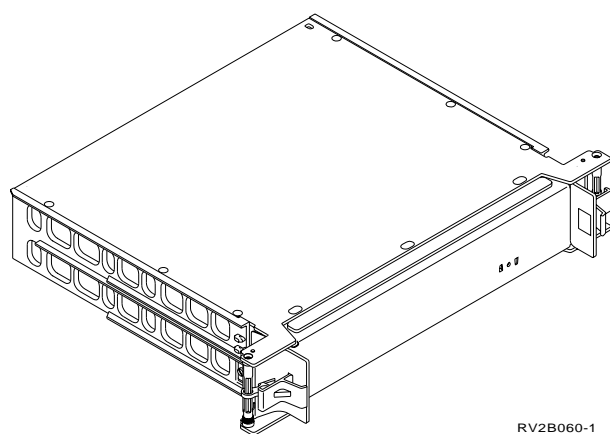
**Note:** All 280x removal and installation procedures require a Torx size 10 screwdriver.

38. Remove the 280x card(s) from the 9406 system unit.
  - Slot location 23/24 (Device 1 and 2)
  - Slot location 25/26 (Device 3 and 4)

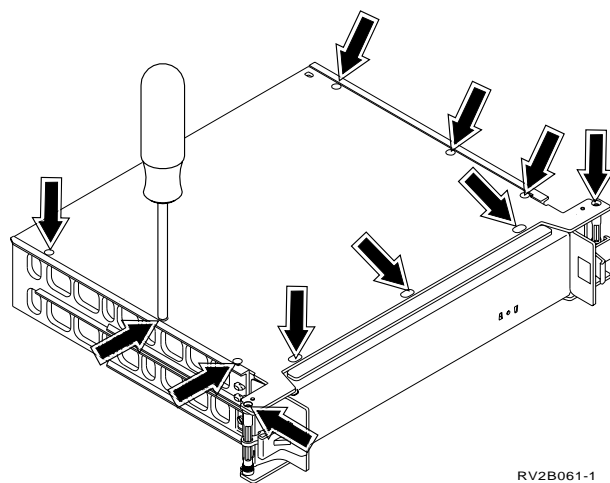
Slots 23/24	Slots 25/26
Disk Unit 2	Disk Unit 4
Disk Unit 1 (L.S.)	Disk Unit 3

Figure 13. Locations of 9406 internal disk units

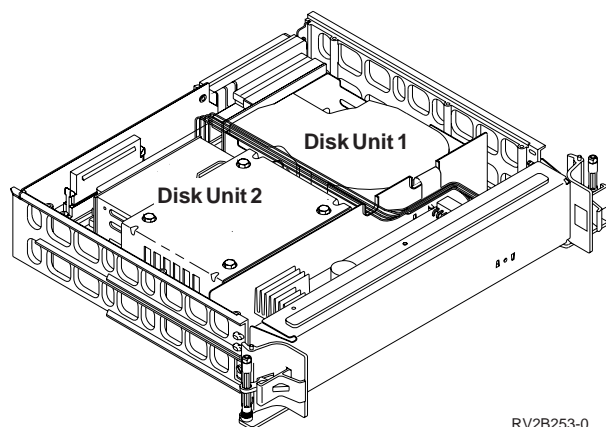
39. Use the figure above to identify the disk units inside the 280x card.
40. Place the 280x card on an ESD mat on a flat surface. The side of the card that has a label on it should be facing down.



41. Remove the 11 cover mounting screws.

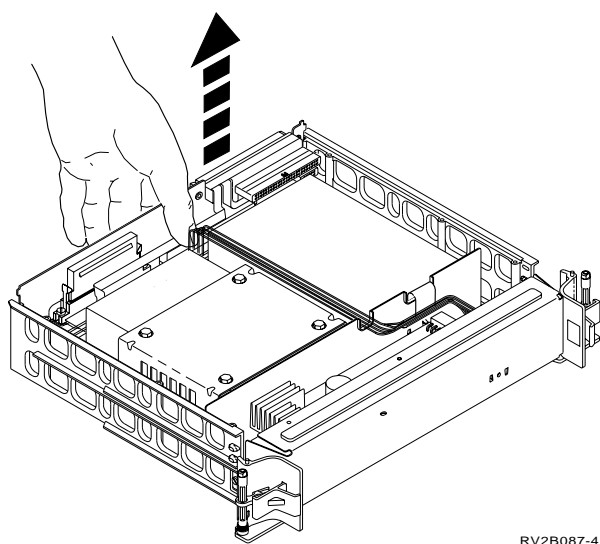


42. Remove the cover from the 280x card.  
Set the cover aside and away from the ESD mat.

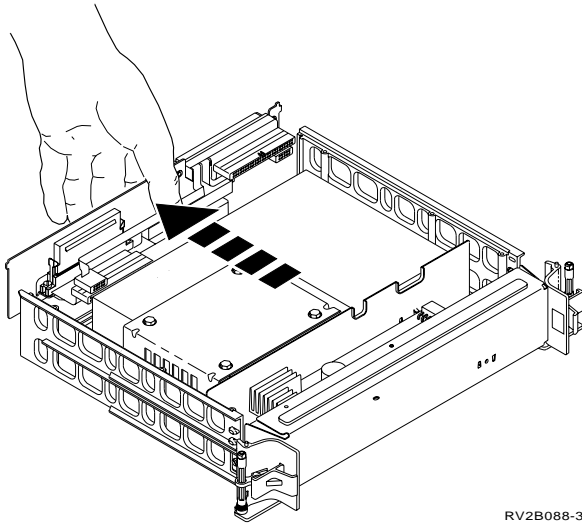


43. Place your fingers under the bottom connector on the connector bracket and lift the bracket until it is free of the slots into which the bracket slides.

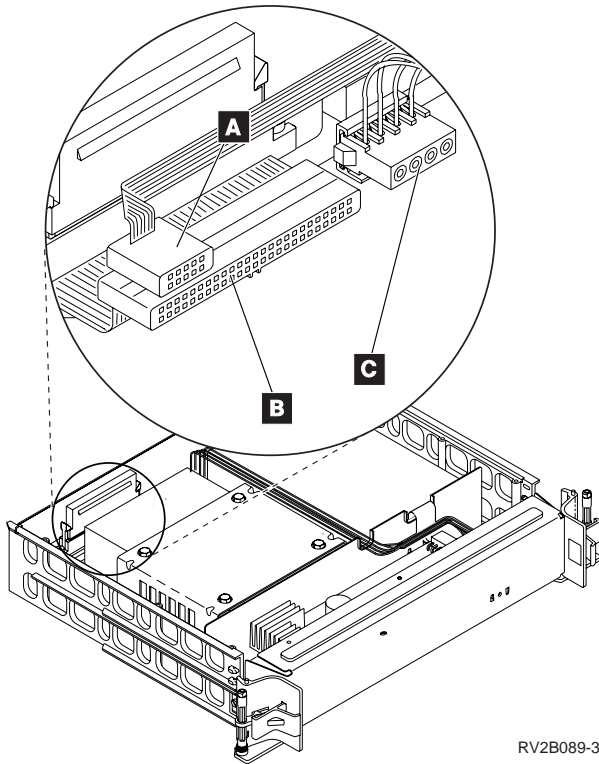
**Note:** You must lift the bracket only approximately 1 cm (0.4 inch).



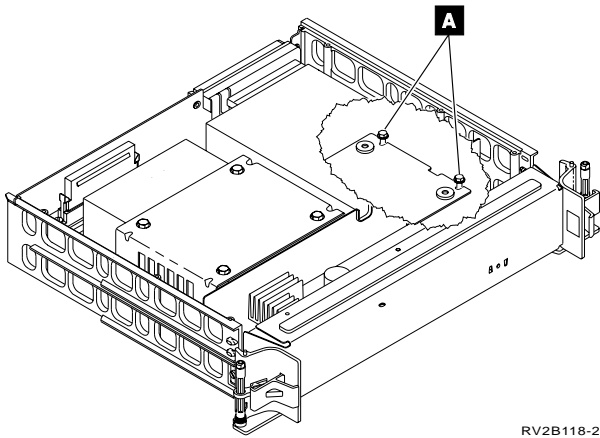
44. Hold the connector bracket as shown and move it away from the frame.



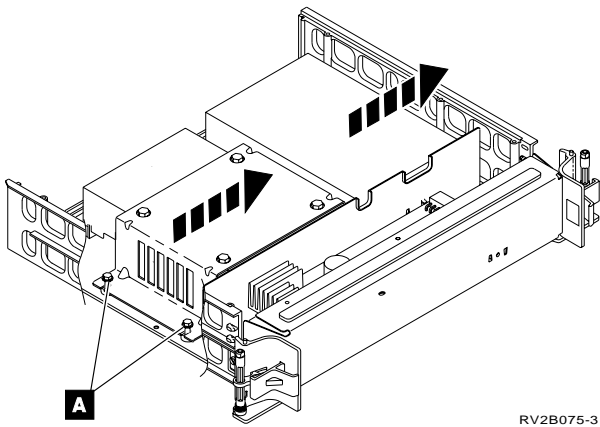
45. Disconnect connectors **A**, **B**, and **C** from disk unit 1 and disk unit 2.



46. Remove two of the disk unit bracket mounting screws **A**.



47. Loosen, but do not remove, the other two disk unit bracket mounting screws **A**. Slide the disk unit bracket in the direction shown as far as it will move.



48. Tightly hold the disk unit bracket and lift the two disk units and their attaching hardware out of the 280x card.  
 49. Set the 280x card assembly frame aside and away from the ESD mat.  
 50.

**Attention:** Ensure that disk unit 1 of the 280x card that was plugged in the system unit in slot 23/34 (the load source) is labelled if it is to migrate as the load source in the Model 7xx/6xx/SB1 system. This is to ensure that it is identified as the load source unit and it will be installed in the load source position in the Model 7xx/6xx/SB1 system unit.

Using the blank label provide in the MES ship group, label all disk units with disk unit number, disk unit location, and type. Example:

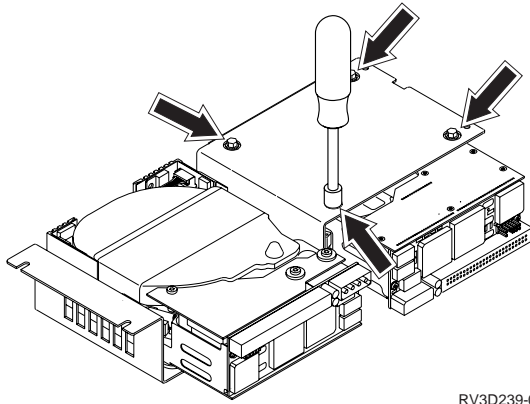
Unit 1

Slot 23/24

6105

51. Remove the four screws that fasten disk unit 2 to the mounting bracket.

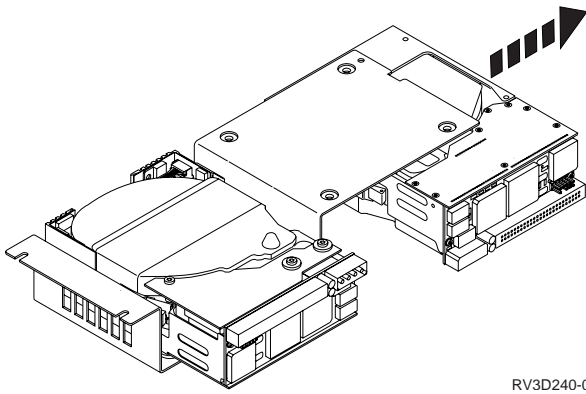
Do not discard the 4 screws. These screws will be used in step 71 on page 109.



52.

**Attention:** Do not touch the circuit cards on the disk unit.

Slide the disk unit from under the mounting bracket. And set the disk unit on the ESD mat.



53. Turn the mounting bracket and disk unit 1 over and remove the four screws that fastens disk unit 1. **Do not discard the 4 screws. These screws will be used in step 71 on page 109.**
54. Lift the mounting bracket and set the mounting bracket aside and away from the ESD mat.
- 55.

**Attention:** Do not touch the circuit cards on the disk unit.

56. The 2 disk units you have removed from the 280x card are ready to be converted to the new Model 6xx/SB1 hardware. If the disk units were installed in card position 23/24, convert unit 1 first and then convert unit 2.
57. **Conversion Kits Repackaging 9404 and 9406 Integrated Disk Units**
  - The conversion kit will consist of a disk unit tray assembly.
  - The disk unit conversion kit hardware will be shipped assembled minus a disk unit.

- The disk tray assembly will be taken apart to allow the installation of the disk units being migrated.
- The card assembly in the tray can be a 'capacitor' type for installation in a system without the SPCN feature (Model 300 with base feature #9142) and it can be visually verified by the one capacitor on the card assembly;
- The card assembly in the tray can be a 'regulator' type for installation in system with the SPCN feature (All other Models) that can be visually verified by the densely populated card assembly.

58. Are you working with a 6602 disk unit type?

No      Yes

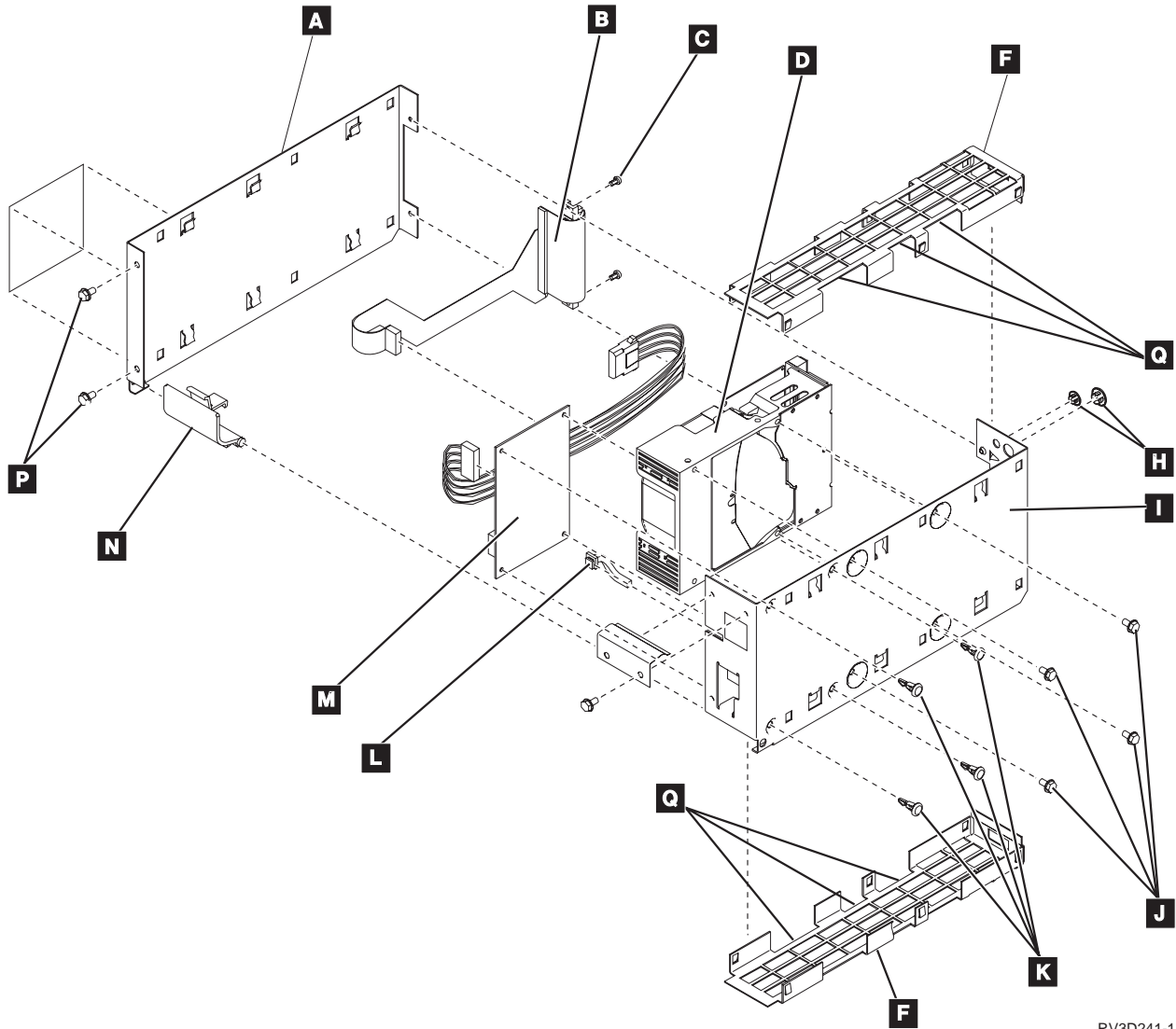
↓

Go to step 60 on page 107.

59. Figure 14 on page 107 shows an exploded view of the disk unit assembly hardware to convert the 6105, 6107, 6109 and 6603 disk unit types. The tray assemblies will be labelled with the conversion feature code. The conversion feature code will denote whether the disk units are to be installed in a SPCN system or Non-SPCN system based on the MES upgrade order.

**Attention:**

**If the disk unit you are converting is going to be installed in a Model 600, 610, S10 or S20, go to step 78 on page 110.**



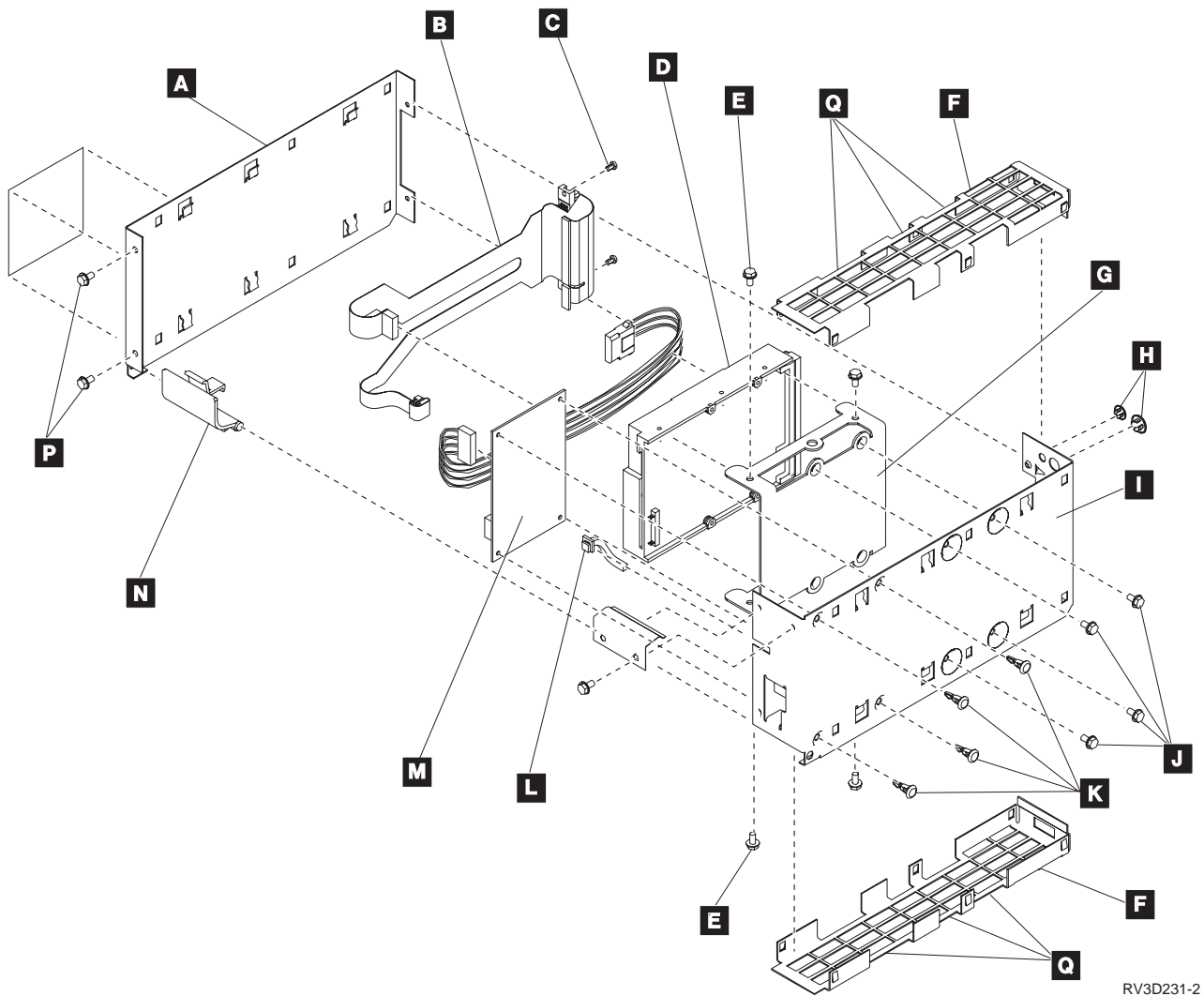
RV3D241-1

Figure 14. Disk unit tray assembly to convert disk types 6109 and 6603

60. Figure 15 on page 108 shows an exploded view of the disk unit assembly hardware to convert the 660x disk unit type. The tray assemblies will be labeled with the conversion feature code. The conversion feature code will denote whether the disk units are to be installed in a SPCN system or Non-SPCN system based on the MES upgrade order.

**Attention:**

If the disk unit you are converting is going to be installed in a Model 600, 610, S10 or S20, go to step 78 on page 110.



RV3D231-2

Figure 15. Disk unit tray assembly to convert the 660x type disk.

61. As you begin to convert the disk hardware:
  - Ensure that you are using a flat surface to work on.
  - Ensure all work with the disk unit should be on the ESD mat to prevent damage.
  - Ensure all hardware other than the disk enclosures/logic card assemblies that were removed from the 9404 or 9406 are set aside and away from the ESD mat.
62. For the 6602 disk unit type refer to Figure 15 while performing the following steps.  
For the 6603 disk unit type refer to Figure 14 on page 107 while performing the following steps.
63. Find the new disk unit assembly. Use Table 4 on page 89 and verify that you have the correct assembly for the type of disk unit being converted.
64. Remove the top and bottom shield covers **F** of the new disk unit assembly by doing the following:
  - a. Loosen the screws **C**.
  - b. Loosen the screws **P**.

- c. Insert the tip of a flat blade screwdriver at points **Q**.
  - d. Rotate the screwdriver to push the shield cover **F** away from the disk carrier assembly cover **A** and the tray **I**.
  - e. Repeat steps 64c and 64d to remove the other shield cover.
65. Separate the disk carrier assembly cover **A** from the tray **I** by removing 4 screws:
- 2 hex screws **P**.
  - **Move latch **N** to open position to access one of the screws.**
  - 2 Torx screws **C** at the SCSI Connector end.

**Set the screws aside for they will be used later in step 74 to reassemble the tray assembly.**

- 66. Before removing the blue latch **N**, note its installed position between the pivot holes that are on the disk carrier assembly cover and tray.
- 67. Set the disk carrier assembly cover and blue latch aside.
- 68. Place the tray **I** on the ESD mat on its side with the card and cables facing away from you.

**Attention:** Do not touch the circuit cards on the disk unit.

- 69. Connect the power/address cables from the card assembly **M** and the flex-type SCSI cable **B** to the disk unit **D**.
- 70. With one hand hold and align the disk unit **D** with the tray.
- 71. Find the screws from steps 51 on page 104 and 53 on page 105 (9406 280x disk unit removal) or step 24 on page 95 (9404 disk unit removal).

These screws will be used to mount one disk unit **D** :

For **6105, 6107, 6109 and 6603** disk types use the four screws **J** to fasten to tray.

For **6602** disk type, use the four screws **E** to fasten disk unit to mounting bracket **G** (This bracket will already be attached to the tray with 4 screws **J**)

- 72. Take the disk unit assembly cover **A** align it with the tray **I**.
- 73. Place the 'blue latch' **N** in its original installed position in pivots holes.
- 74. Use the 4 screws that were removed in step 65 to fasten the disk unit assembly cover to the tray assembly:
  - 2 hex screws **P** at the 'blue latch' end
  - **Keep the latch in its open position to fasten the screw.**
  - 2 Torx screws **C** at the 'SCSI Connector' end
- 75. Take each shield cover **F** that was removed in step 64 on page 108 and carefully align it between the disk unit assembly cover **A** and tray **I**. Press each end of the shield cover into place with the palms of your hand.  
Repeat this step for the other shield cover.
- 76. The disk unit tray assembly is complete.

Label disk units assemblies with new CCIN and new Feature Code with labels provided. Use Table 4 to determine which label to use for each disk unit tray assembly.

- 77. Go to step 79 on page 110 and continue.

**Attention:** Do not install a disk unit kit with the keyed plugs **H** removed. Damage to disk unit and customer data loss will occur.

78. **Attention:** For a converted disk unit that will be installed in Models 600, 610, 620, S10, S20, 620 System Unit and S20 Expansion Unit, use the *AS/400e server 600, 620, 720, S10, and S20 Problem Analysis, Repair and Parts*, SY44-5955-05:

- **Parts Listing, Assembly 4-** to assemble the disk unit with conversion kit
- **Locations and Addresses-** to locate the assembled disk unit for your model's configuration.

79. **How to determine where to locate and install the disk unit tray assembly.**

The disk unit can now be integrated into the Model 6xx/SB1 hardware. Now you will determine where to install the disk unit assembly.

**Notes:**

- a. When installing disk units, the system unit should be populated first. Then positions in the disk expansion units and disk storage expansion towers.
- b. If auxiliary storage protection is configured, for example, mirrored protection, or parity protection, have the customer review the *Backup and Recovery*, SC41-5304-04 .
- c. If the disk unit was unit 1 (Load Source) of the 940x Cxx-Fxx system, it should have been labeled with the type of disk and "Unit 1" during its removal.
- d. **If a unit 1 (load source) is being migrated as the load source for the new system, it MUST be installed in the disk location L01 of the 6xx or SB1 System Unit.**

**Note:** If a unit 1 (load source) is being converted but will not be the load source for the new system, the Load Source Utility can be used to restore the data on the new load source. Follow the printed instructions regarding the Load Source Utility and the installation of the load source units (Old and New) during the running of this utility. After the Load Source Utility has completed go to step 83.

- e. **Disk units that were converted are not allowed in the disk unit position F8 and are not allowed positions K8 through K16 of FC 505x.**
80. Use the System Unit or Expansion Unit diagrams to select new disk unit positions.

**Attention:** For models 600, 610, 620, S10, S20, 620 System Unit, and 620/S20 Expansion Unit, use the *Parts Listing, Assembly 4* and *Locations and Addresses* sections in the *AS/400e server 600, 620, 720, S10, and S20 Problem Analysis, Repair and Parts*, SY44-5955-05.

81. Install the disk units.
82. Do you have another **disk unit** that was removed from a 9404 disk unit carrier or a 9406 280x card to convert?

**No      Yes**

↓      **Go to step 57 on page 105.**

83. Do you have more disk units to remove from 9404 disk unit carriers or 9406 280x cards?

**No      Yes**

↓      **Go to step 10 on page 91.**

*Return to the printed instructions or to the page that sent you here.*

## A811: Disk Removal Procedure

To remove disk units from the installed system, use the following procedure.

1. Have the customer do a normal power-off procedure of the system.  
This is done to ensure that jobs are ended normally and disk data is updated before you continue with this procedure.
2. Perform a manual IPL from disk by doing the following:
  - a. Set the keylock mode on the control panel to the Manual position.
  - b. Perform an IPL from disk
3. Select the Use dedicated service tools (DST) option from the display or use a function key.
4. Verify Disk Configuration

Perform the following:

- a. On the Use Dedicated Service Tools (DST) display, select the Work with disk units option.
- b. Select the Work with disk configuration option.
- c. Select the Display disk configuration option.
- d. Select the Display disk configuration status option.
- e. Record the ASP, unit, serial number, type, and address of the unit to be removed.
- f. On the Display Disk Configuration Status display, ensure that:
  - The disk unit is not the load-source disk unit (unit 1).
  - There are no disk units that are missing from the configuration.  
Note: A missing unit is indicated by an asterisk (\*) next to the unit number.
  - The status field of the disk unit to be removed shows Configured.
5. Verify disk configuration capacity
  - a. Return to the Display Disk Configuration display.
  - b. Select the Display disk configuration capacity option.  
Does the % Used field for the disk unit to be removed show an asterisk (\*)?  
  
**Attention:** An asterisk (\*) indicates that you cannot use the Remove Units from Configuration function because customer data may be destroyed.
  - c. Return to the Work with Disk Units display.
6. Select the Work with disk configuration option.
7. Select the Work with ASP configuration option.
8. Select the Remove units from configuration option.
9. Select the disk unit to be removed.
10. If the Confirm Continuation display appears, press the Enter key to continue. Wait for the next display.
11. The Confirm Remove Disk Units display appears if there is sufficient storage in the ASP. If there is not sufficient storage, an error message display appears.
12. Press the Enter key to confirm the Remove Disk Units function.
13. The Remove Disk Units function takes several minutes. When it is complete, a message appears, stating whether it was successful.

14. Return to the Work with Disk Units display, select the Work with Disk Configuration option.
15. Select the option to display disk configuration.
16. Select the option to display non-configured disk units.  
Ensure the unit you removed is shown as a non-configured unit.

*Return to the printed instructions or to the page that sent you here.*

## A814: Load Source Disk Recovery for Detected Problem during PowerPC Model Upgrades

You were directed to this HELP section to perform a recovery procedure for a system symptom that was experienced during the model upgrade. This procedure does not replace existing disk recovery procedures in the system service manuals.

**Note:** The *Disk Configuration Warning and Error Messages* appendix in the *AS/400 Road Map for Changing to PowerPC Technology*, SA41-5150-05, will provide additional information about system messages that may appear.

Prerequisites before running the recovery procedure:

1. Printed instructions to perform this recovery for this specific symptom.
2. Install media
3. AIPL device installed that supports the install media

Do the following:

1. Ensure that the system is powered off.
2. Determine the removable media unit for an alternate IPL (see “Determining the Alternate IPL Device” in the *9402/9404 Models 4xx Problem Analysis, Repair and Parts, and Upgrade*, or *9404/9406 Models 5xx Problem Analysis and Repair and Parts* information). Ensure that the removable media unit is powered on.
3. Place the media containing the Licensed Internal Code (first tape of the customer’s system save, the SAVLIC, or ISMD tapes or CD storage) in the removable media unit. Load the media and make the media AIPL device unit ready.

**Note:** See the device information for instructions on loading the removable media.

4. Select a Type D IPL in Manual mode.
5. Ensure that the console is powered on
6. Press the Power pushbutton to power on the system.

**Note:** Some types of removable media units automatically reset. In this condition, SRC A100 1933 (Media device not ready) is displayed until the device automatically makes itself ready.

The removable media starts to move. Then there is a delay while the system loads information from. SRCs showing the status are updated continuously on the control panel while the system is processing.

7. Wait for the Install Licensed Internal Code display to appear on the system console. The wait varies depending on the speed of the removable media unit and the processor speed for the specific system model.

**Notes:**

- a. If SRC A600 500x is displayed on the control panel, the system was not able to locate the system console.

Ensure that the system console is powered on (repair if necessary). Select Function 21 on the control panel to make DST available.

- b. If an SRC other than A600 500x is displayed on the control panel, go to “Starting Point for All Problems” in the *AS/400e server 600, 620, 720, S10, and S20 Problem Analysis, Repair and Parts*, or *AS/400e series 640, 650, 730, 740, S30, S40, and SB1 Problem Analysis, Repair and Parts* information.

8. The Install Licensed Internal Code display appears on the system console.

Install Licensed Internal Code

System: S102652A

Select one of the following:

1. Install Licensed Internal Code
2. Work with Dedicated Service Tools (DST)

Selection

Licensed Internal Code - Property of IBM 9400LIC Microcode (C)  
Copyright IBM Corp. 1980, 1995. All rights reserved. US  
Government Users Restricted Rights - Use, duplication or  
disclosure restricted by GSA ADP schedule Contract with IBM  
Corp.

9. Select the *Install Licensed Internal Code* option on the Install Licensed Internal Code display.

- 10.

**Attention:** Ensure that the load source disk unit serial number is the same serial number as the new disk unit provided in upgrade MES package. Ensure it is not an old IMPI disk unit.

Select the *Install Licensed Internal Code and Upgrade Load Source* option from the Install Licensed Internal Code display.

```

                                Install Licensed Internal Code (LIC)

Disk selected to write the Licensed Internal Code to:
  Serial Number   Type   Model   I/O Bus   Controller   Device
    00-0243935    6602    030      0         1           0

Select one of the following:

    1. Restore Licensed Internal Code
    2. Install Licensed Internal Code and Initialize system
    3. Install Licensed Internal Code and Recover Configuration
    4. Install Licensed Internal Code and Restore Disk Unit Data
    5. Install Licensed Internal Code and Upgrade Load Source

Selection

F3=Exit          F12=Cancel

```

11. The Install Licensed Internal Code Confirmation display appears.

```

                                Install LIC and Upgrade Load Source - Confirmation

Warning:
  All data on the selected disk will be destroyed and the Licensed
  Internal Code will be written to this disk if you choose to
  continue the install. When the install is complete, an IPL
  will be done and you will be prompted to complete the upgrade.

Press F10 to continue the install.
Press F12 (Cancel) to return to the previous screen.
Press F3 (Exit) to return to the install selection screen.

F3=Exit          F10=Continue          F12=Cancel

```

12. Press F10 to continue.

**Note:** A series of displays appear on the system console throughout the process to show the install status. User intervention may be required.

13. The system automatically performs a disk IPL.

The Install the Operating System display appears.

14. Exit.

15. The procedure is complete, remove the media from the removable media unit.

*Return to the printed instructions or to the page that sent you here.*

## A820: How to Convert and Migrate 940x Quarter Inch Cartridge (QIC) Magnetic Tape Units

The purpose of this procedure is to provide instructions to repackage 940x Quarter Inch Cartridge (QIC) Magnetic Tape Units.

The QIC Tape Units identified in Table 5 can be converted to the Model 6xx/Sxx hardware. The conversion kit feature code includes the hardware that will allow physical installation of the tape device in the Model 6xx/Sxx. This conversion can only be performed when upgrading from a AS/400 940x System models to the 940x System Model 6xx/Sxx.

Verify that you have the correct conversion kit for the tape unit you are migrating.

**Note:** There are different conversion kit features to support the different tape unit types and to support whether the tape units are to be installed in a SPCN system (regulated power) or Non-SPCN system (non-regulated power).

Inspect the conversion kit that was received with MES shipment. Position that kit with the handle facing you and the connector facing the rear. Each type of kits is keyed with a tab on the card holder assembly at the connector end. The SPCN (regulated) kit will have this tab located on the right. The Non-SPCN (non-regulated) kit will have this tab on the left. See item **G** of the tape kit in step 24 on page 123. The tab is to prevent the installation of a kit that is not compatible with the power feature of the system. Do not force the assembly if it does not install easily, the tab and the tape unit device will be damaged if it is not compatible with the power feature of the system.

**When upgrading a system model 300 with Feature 9142 (Non-SPCN Model 300) to a SPCN Model 6xx/Sxx, all internal tape units and disk units must be converted or removed. For disk unit conversion, follow the printed instructions and HELP A810.**

1. **Supported Tape Device Types for Conversion** The following table will identify which Quarter Inch Cartridge (QIC) tape units are allowed to be converted and migrated to the Model 6xx/Sxx hardware. The table can be used to ensure the correct migration kit is used.

Table 5. *Tape Unit Conversions.* For Models 6xx/Sxx Hardware

AS/400 Feature	Capacity	CCIN	Kit for 640, 650, S30, S40, SB1	Kit for 600, 620, S10, S20
6335	840MB	6335	6335	1305
5348, 6348, 6368, 7348, 8348	1.2GB	6379	1379	1349
5349, 6349, 6369, 6380, 7349, 8349	2.5GB	6380	1380	1350
6385	13GB	6385	6385	1335
6390, 1261	7.0GB	6390	6390	1360
6380	2.5GB	6380	1380	1350
6381	2.5GB	63A0	1380	1350

Go to 2 for conversion details.

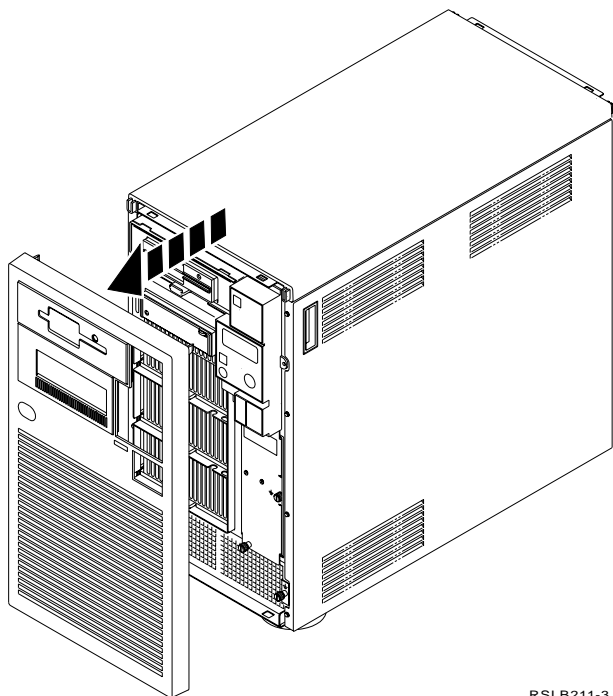
2. **Tape Conversion** Are you migrating QIC Tape Units from a AS/400 9404?

Yes      No



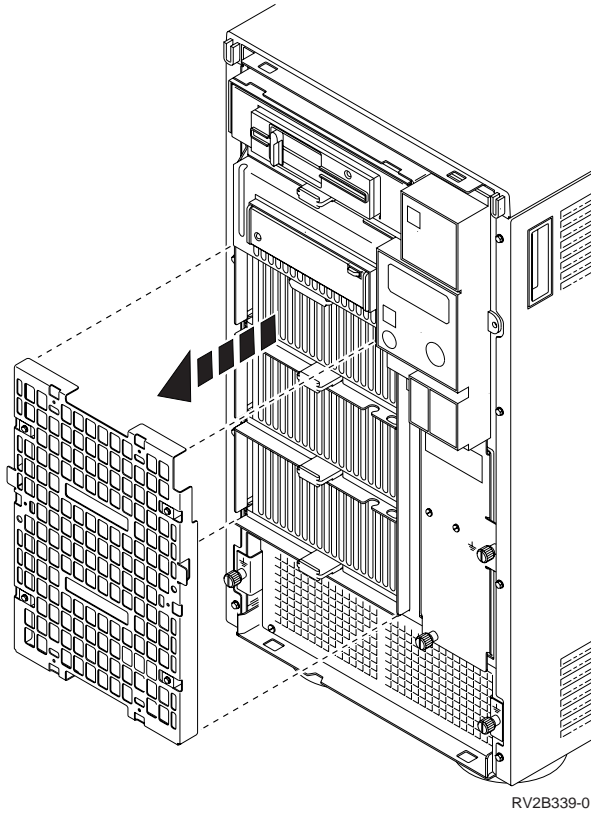
**Go to step 16 on page 120 to remove AS/400 9406 internal tape units.**

3. This procedure is to remove the QIC Tape Unit device from the 9404 device tray assembly.
4. Remove the front system unit cover, if not already removed.

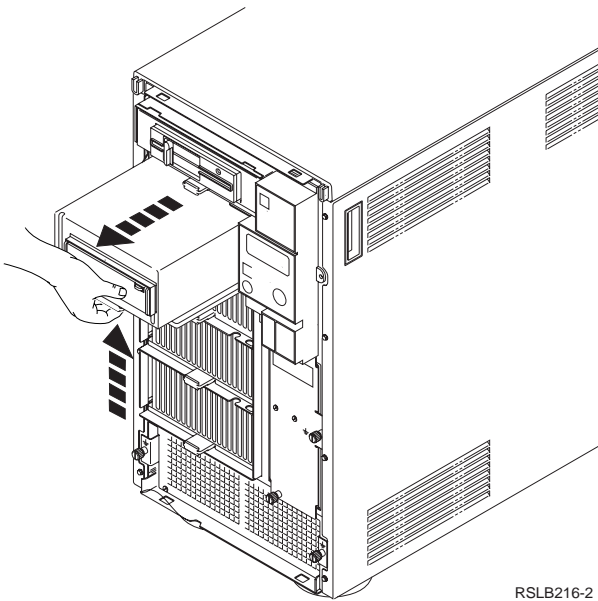


RSLB211-3

5. Remove the disk unit shield, if not already removed.  
Hold the shield by the edges and pull until the shield comes off the frame.

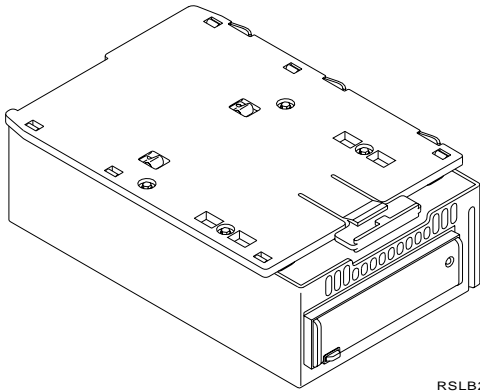


6. Slide the tape unit out of the frame. This is done by lifting up on the tape unit carrier tab to release it from its latch, and then pulling out on the tab to slide the tape unit out of the frame.



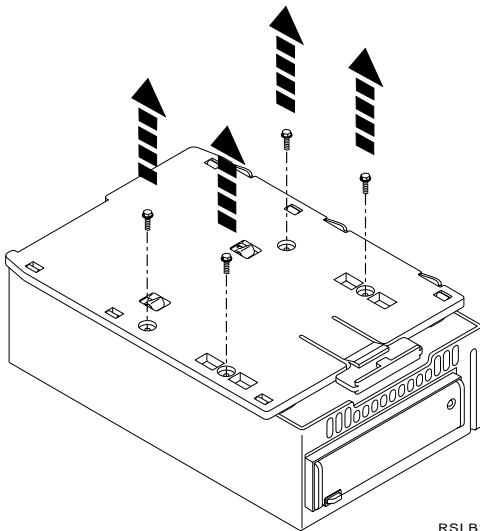
7. On a flat surface, place the tape unit top side down.

## A820



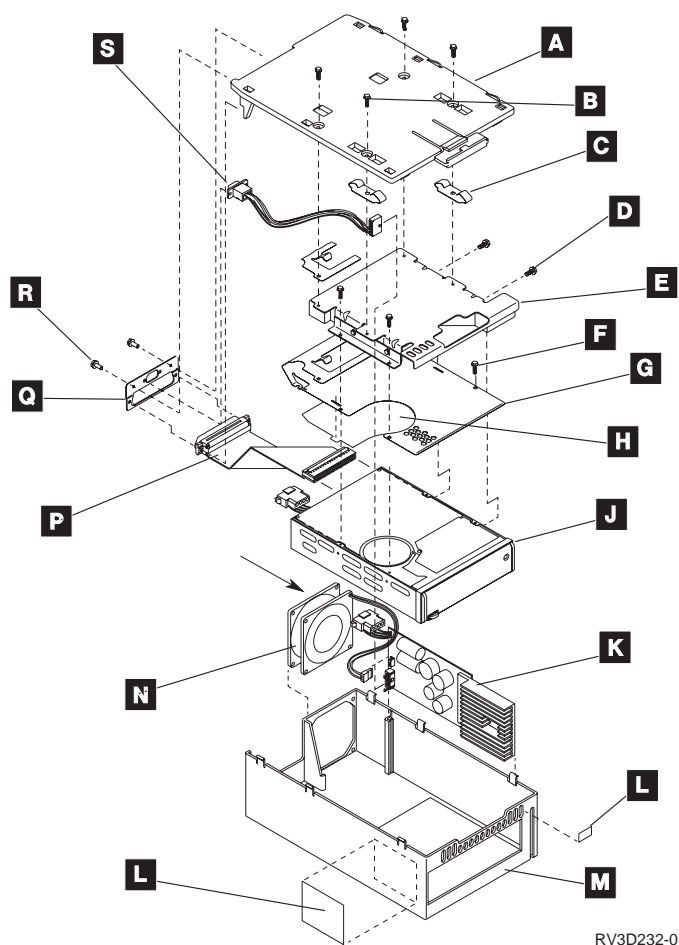
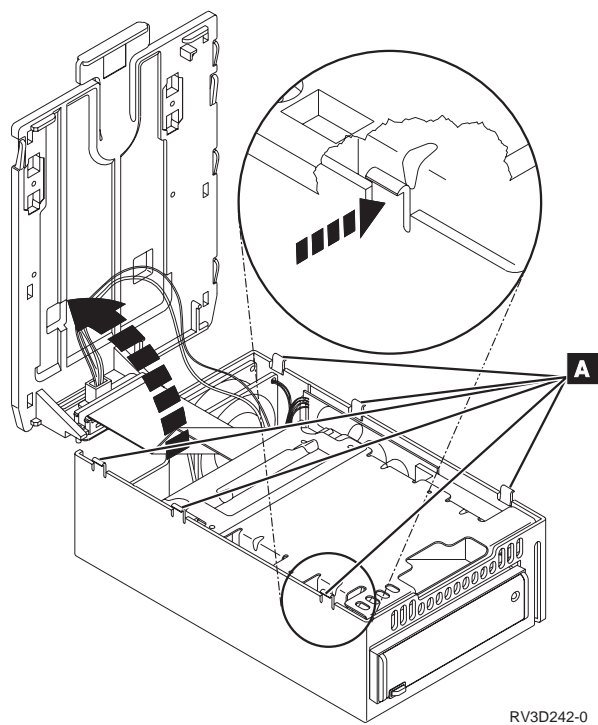
RSLB292-1

8. Remove the 4 screws that hold the base plate to the tape drive unit assembly. Save these screws. They may be used later.



RSLB293-1

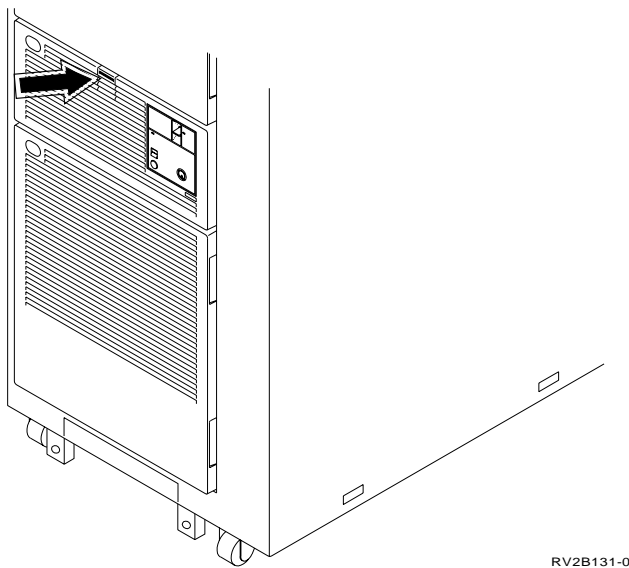
9. Using a flat blade screwdriver, press inward on each catch tab **A** and rotate the screwdriver while lifting the base plate up to expose the internal parts of the assembly.



10. Carefully remove the tape unit **J** from the assembly.
11. Remove the 4 screws **D** to remove the Adapter Plate **E**. Save these screws. They may be used later.
12. Remove the EMI shield **G** by removing 2 TORX screws **F**.

The 2 TORX screws that are hidden on the SCSI connector end of the EMI shield **G**.

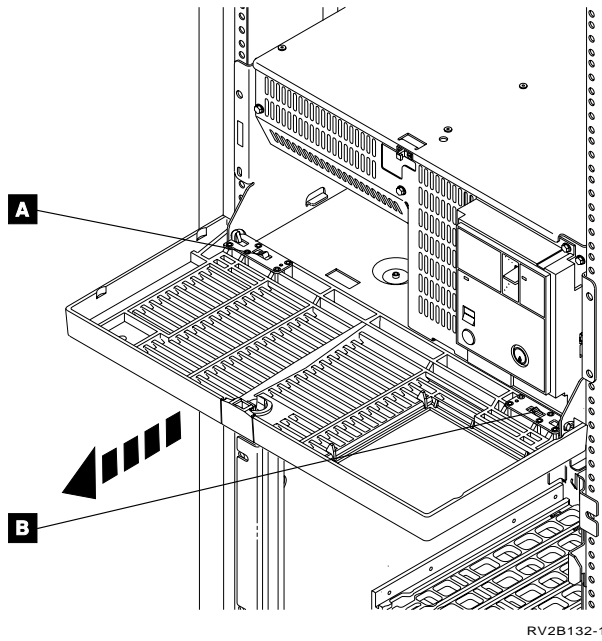
- a. Remove the 2 TORX screws and set them aside.
- b. Remove the EMI shield **G**.
- c. Reinstall the 2 TORX screws that was removed in Step 12a back in the original positions at the SCSI connector end of the tape unit.
13. Disconnect the signal cable **P**.
14. Disconnect the power cable **S**.
15. The tape unit is ready for conversion. **Go to 24 on page 123.**
16. **9406 QIC Tape Unit Removal** This procedure is to remove the Support Box save/restore device tray.
17. Ensure that the system is powered off.
18. Remove the front cover, if not already removed.
19. Open the cover by doing the following:
  - a. Press in at the top center of the cover to release it.
  - b. Keep your hand on the cover as it rotates down to the position shown in Step 20.



RV2B131-0

**Note:** This figure shows the cover for an 9406 system unit. The cover for other units has a different control panel.

20. Slide the latch at **A** and the latch at **B** toward each other while pulling the cover toward you.



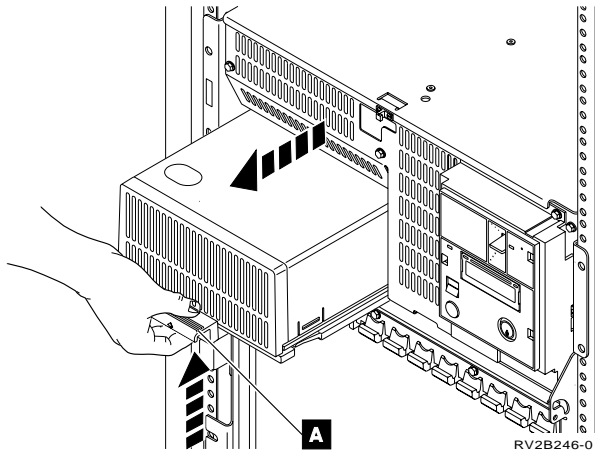
21. Remove the tray by doing the following:

- a. Lift up on the handle **A**.

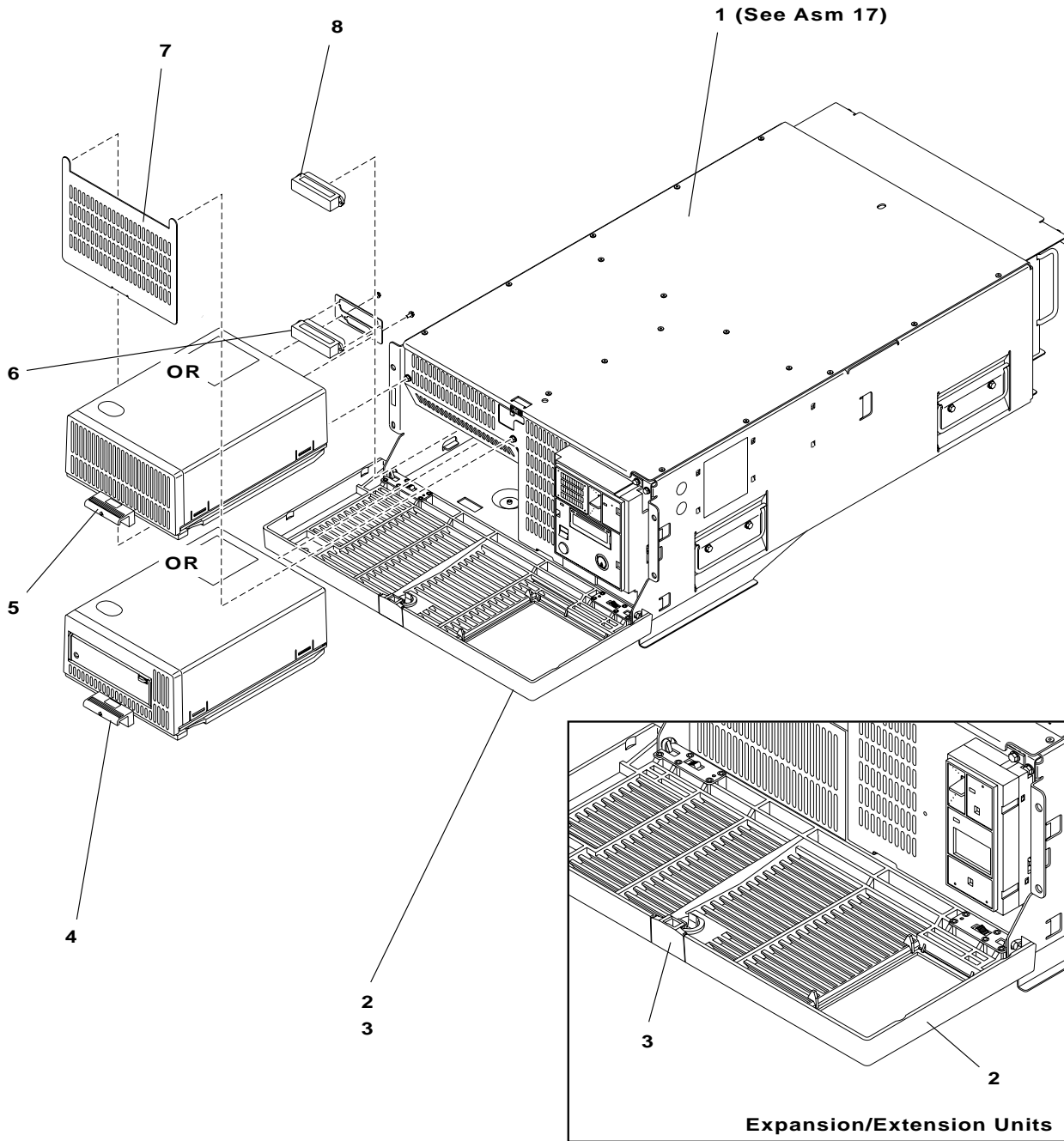
**CAUTION:**

This unit may fall toward you if you do not hold it with both hands. Hold the handle provided with one hand and place your other hand under the unit. (RSFTC218)

- b. Pull strongly on the handle to remove the tray.



22. The following is a list of possible tape device types that would be contained in the Support Box as the Save/Restore device.



RV2B282-8

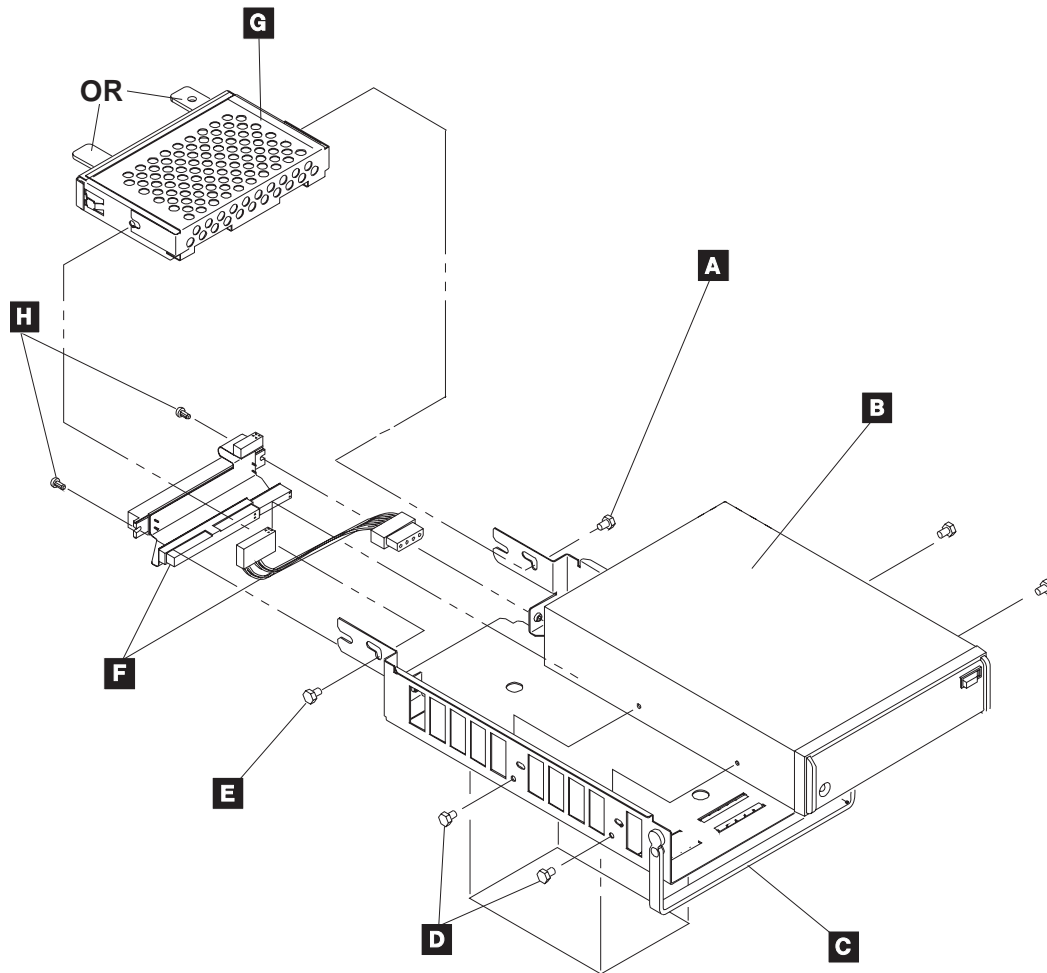
Item **4** is the tape unit and the following are the supported types that are installed in this assembly:

- QIC Tape Unit Asm, System Unit only (125MB) has a grey eject button. (not supported on model 5xx)
- QIC Tape Unit Asm, System Unit only (525MB) has a blue eject button.
- QIC Tape Unit Asm, (1GB) is labelled QIC-1000 on tape door.
- QIC Tape Unit Asm, (2GB) is labelled QIC-2GB on tape door.

23. Follow steps 7 on page 117 through 15 on page 120 of this instruction to remove the tape unit from the tray assembly. You will be directed to step 24 on page 123 when you have completed the removal procedures.

#### 24. QIC Tape Conversion Model 640/650/S30/S40/SB1 Hardware

The tape conversion kit includes an assembled tape tray without a tape unit. It is necessary to disassemble this tray to allow the tape unit installation.



RV3D229-2

25. Remove the 2 screws **A** and **E** that fasten the card assembly **G** to the tray **C**. Notice how the card assembly fastens to the tray. The card assembly will be reinstalled in step 30.
26. Remove the 2 TORX screws and separate the SCSI connector **F** from the tray.

**Attention:** Be careful not to bend any pins while connecting this cable.

27. Connect the SCSI flex cable - power cable - address cable assembly **F** to the tape unit.
  - a. Position the tape unit with connector plugs facing up and to the right, as shown in Figure 16
  - b. Plug the cable for the power connector **1**
  - c. Mis-plugging the cable to the address connector will prevent the tape unit device from reporting in to the system and will not allow the loading of data.

Ensure that the cable for address connector **2** is plugged correctly. Note that the pin rows on the address connector on the tape unit are narrower

than the pin rows on the SCSI connector **3**. While you plug the address connector, Do not align it with the left edge pin row of the SCSI connector. Verify that the address connector cable is plugged properly. The pins on the address connector should not be visible.

- d. Plug the address connector **2**

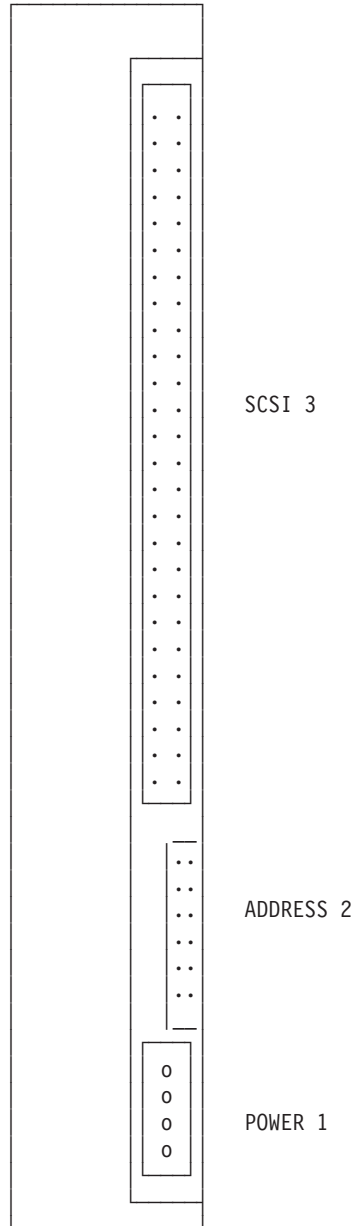
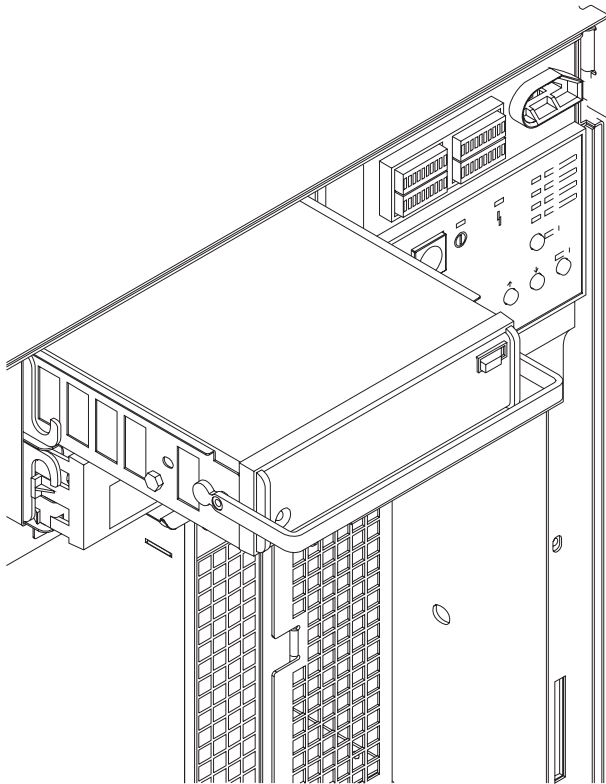


Figure 16. QIC Tape Connector Layout

- e. Plug the SCSI connector **3**
28. Align the tape unit **B** in the tray **C** :
- Hold the front bezel end of the tape unit.
  - Insert the connector end of the tape unit into the tray.
  - Slowly slide and lower the tape unit towards the connector end of the tray.

- d. Ensure that the front bezel of the tape unit is stopped by the front edge of the tray.
  29. Find the 2 screws **A** and **E** that were removed in step 25.
  30. Attach the card assembly **G** to the tray. Start and hand tighten the two screws **E**.
  31. Use 4 screws **D** to fasten the tape unit device **B** to the tray **C**.
  32. Lift the tape unit and tray assembly by the card assembly **G** and tray handle.  
Gently turn it over and lay it back unto the working surface.
  33. Press and hold the card assembly **G** on the working surface. This action will ensure that the card assembly is now flushed against the working surface. This will accomplish a critical alignment that will ease the installation of the tape unit assembly into the system.
  34. Tighten the two (2) screws **A** and **E**.
- Attention:** Do not over tighten screws. Damage to threads on card assembly will occur.
35. Find an available tape unit device installation position.
  36. Install the tape unit assembly.



RV3B411-0

*Return to the printed instructions or to the page that sent you here.*

## A860: How to Convert Disk Units for use in a Model 6xx/7xx/Sxx system

**Attention:** Do not install a disk unit kit with the keyed plugs **H** removed. Damage to disk unit and customer data loss will occur.

Inspect the disk unit conversion kit to ensure the correct kit is used for this procedure. Damage to disk unit and customer data loss will occur if an incorrect conversion kit is used.

Go to Figure 17 on page 128 and Figure 19 on page 130 see item **H**. All conversion kits are keyed with plastic plugs. Note that there are two holes. The larger of the two holes will contain a **white** plug if the kit is for a **Non-SPCN** system. The smaller of the two holes will contain a **red** plug if the kit is for **SPCN** system. Do not continue with this procedure if the kit is incorrect for your system.

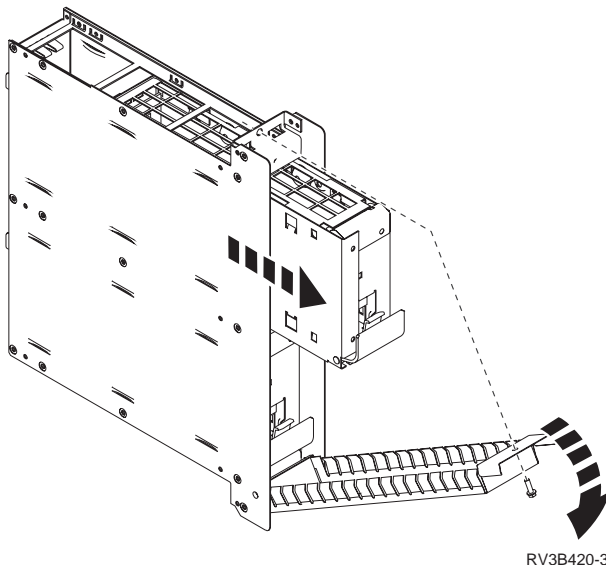
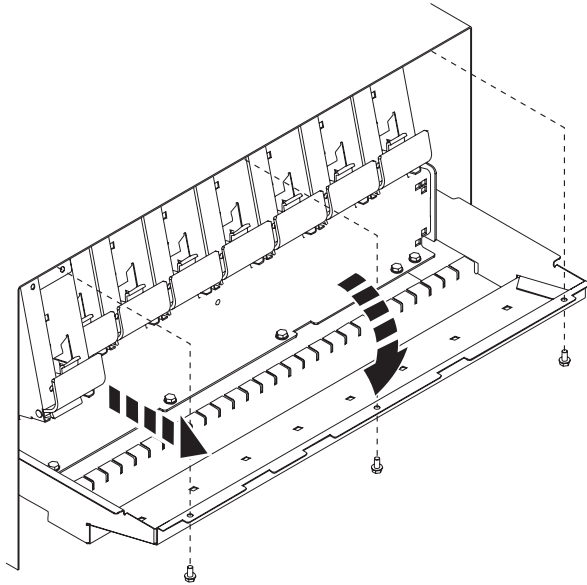
This conversion **MUST** be done for the Disk features shown in the table when the Model 300 System Unit without SPCN is upgraded to a Model 6xx/7xx/Sxx system. Conversion must also be done when disk units that are installed in a Model 300 System Unit without SPCN is moved to a FC 5051 or FC 5052 Disk Expansion Unit.

Service procedures will be referenced in these steps. You will need a copy of the *Repair and Parts* manual.

1.

**Attention:** The disk enclosure and logic card are sensitive to electrostatic discharge. The following procedure **MUST** be performed on the ESD-protected work surface. Ensure that you wear an ESD wrist strap that is connected to the work surface. The ESD wrist strap is supplied in the ESD handling kit, IBM P/N 6428316.

2. Do not hold or apply pressure to the disk enclosure cover. This can cause the disk enclosure cover to touch and damage the disk inside.
3. Ensure that the system is powered off.  
See Powering Off the System in the *Service Referenced Procedures* of the *Repair and Parts* manual.
4. Disconnect the power cord.
5. Remove the front covers.  
See Covers in the "Removal and Installation Procedures" of the *Repair and Parts* manual.
6. If the disk unit you are working with is in a disk expansion unit, do the following:
  - a. Remove the screws
  - b. Pull the cover down as shown



7. If the disk unit you are working with is in a disk unit enclosure, do the following:
  - a. Remove the screw from the disk unit enclosure cover.
  - b. Pull the disk unit enclosure cover down as shown.
8. Remove the disk unit assembly.
9. Remove the disk unit enclosures.
10. Re-key the disk unit enclosures to allow installation and connection to the new system unit backplane which supports SPCN.  
Use a duckbill pliers to remove the white plastic plug (disk enclosure keying plugs). from the A and B positions of each disk unit enclosure.
11. Turn the enclosure(s) as shown and insert two **Red** plastic plugs. One at the A and B disk unit positions of each disk unit enclosure.
12. Ensure that you are using a flat surface to work on.

13. Ensure all work with the disk unit should be on the ESD mat to prevent damage.
14. For 6602 disk unit type refer to Figure 17 or Figure 18 while performing the following steps.

Figure 17 or Figure 18 shows an exploded view of the Model 3xx disk unit assembly hardware for the 6602 disk unit type.

**Attention:**

If the disk unit you are converting is going to be installed in a Model 600, 610, S10 or S20, go to step 36 on page 132.

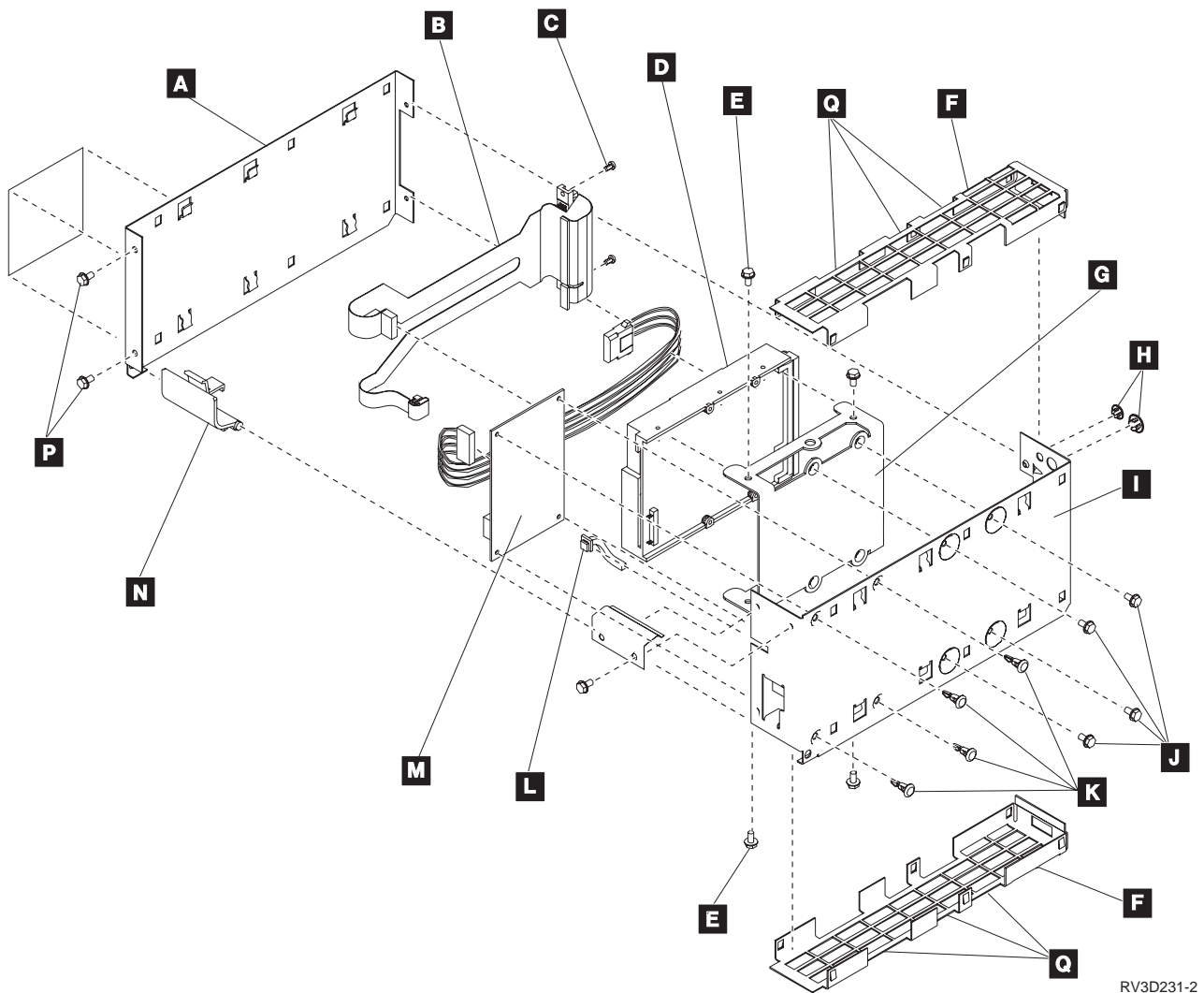
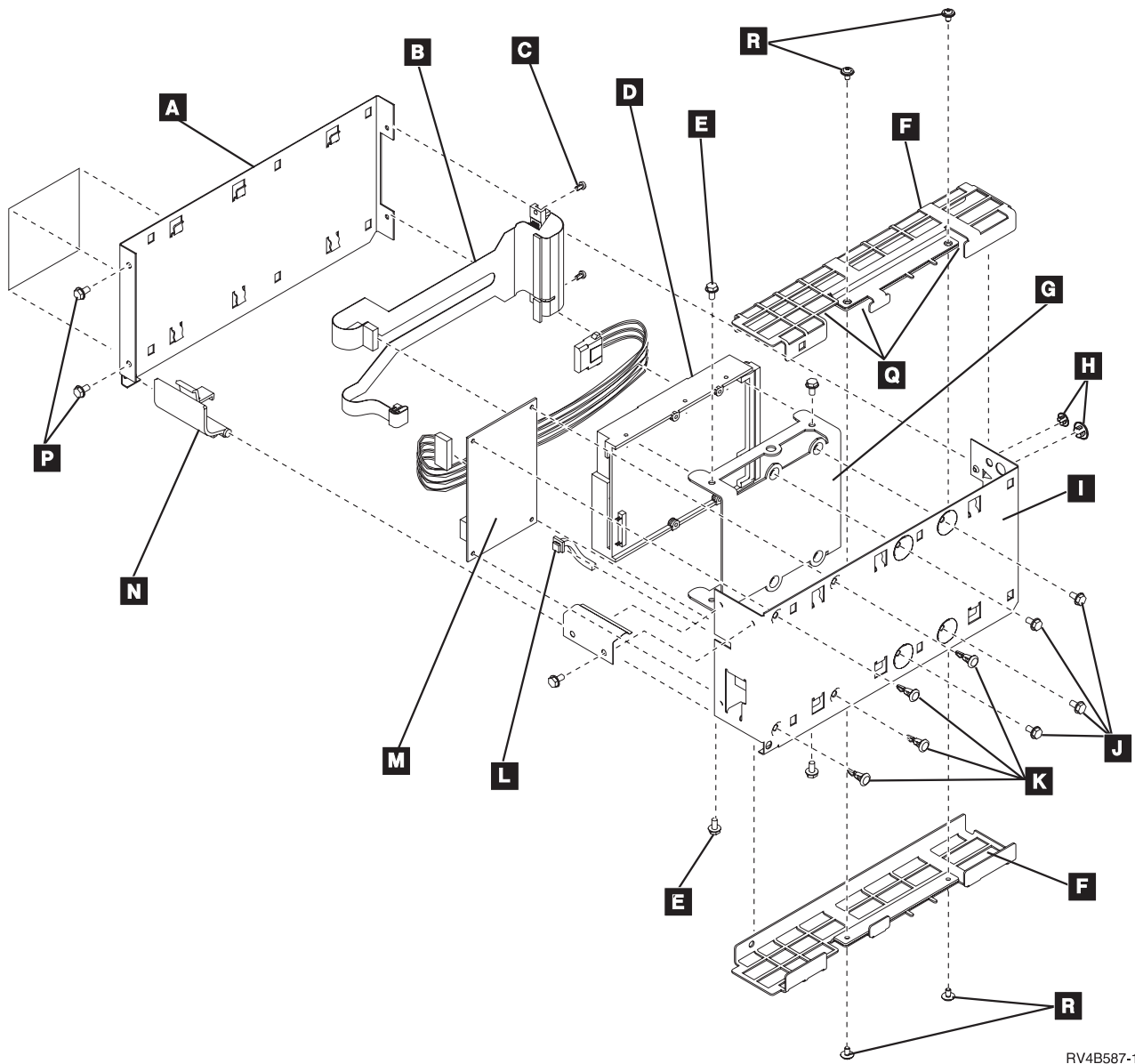


Figure 17. Old style disk unit tray assembly for the 6602 type disk.



RV4B587-1

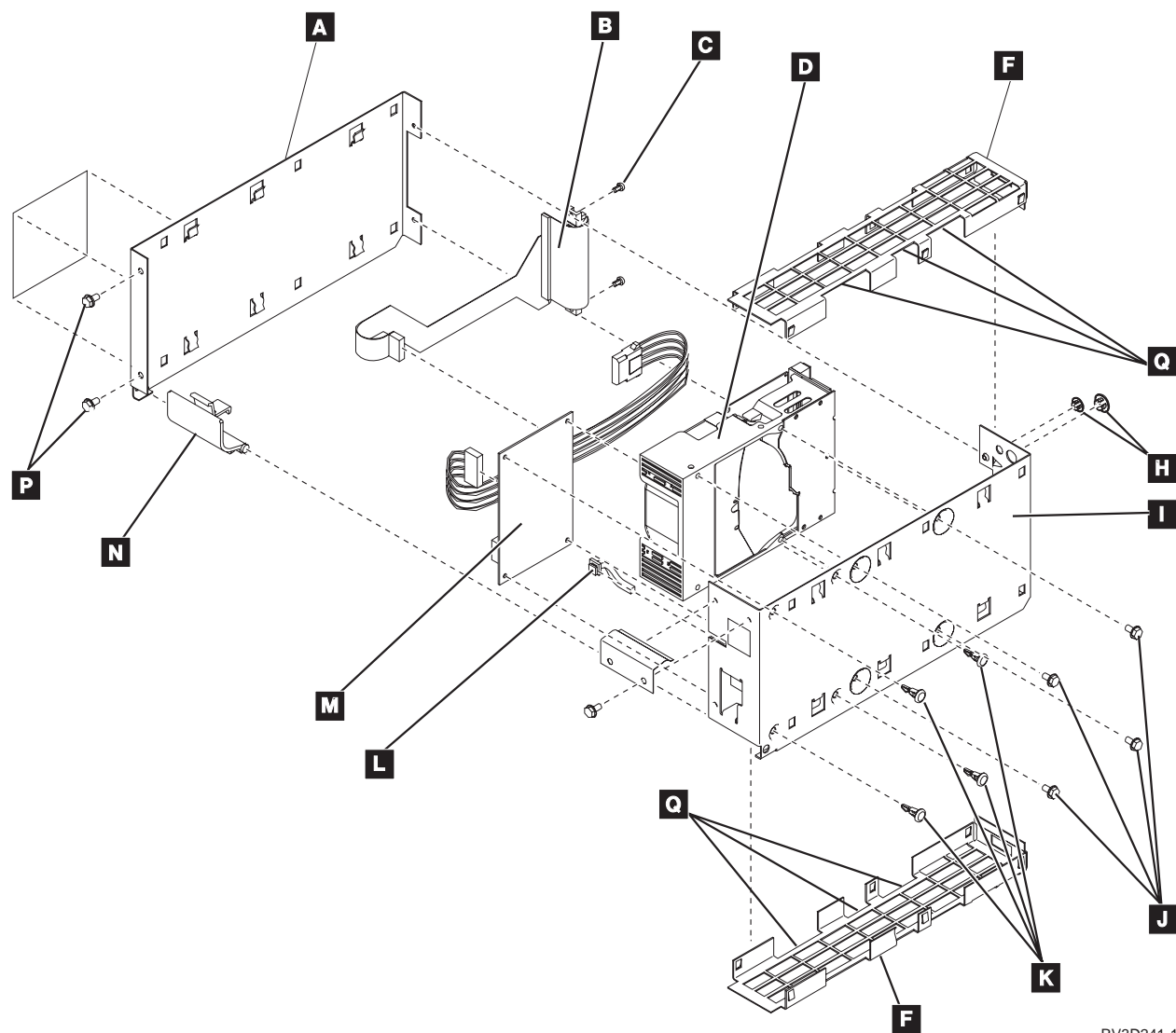
Figure 18. New style disk unit tray assembly for the 6602 type disk.

15. For 6603 disk unit type refer to Figure 19 on page 130 while performing the following steps.

Figure 19 shows an exploded view of the Model 3xx disk unit assembly hardware for the 6105, 6107, 6109 and 6603 disk unit types.

**Attention:**

If the disk unit you are converting is going to be installed in a Model 600, 610, S10 or S20, go to step 36 on page 132.



RV3D241-1

Figure 19. Old style disk unit tray assembly for disk types 6105, 6107, 6109 and 6603

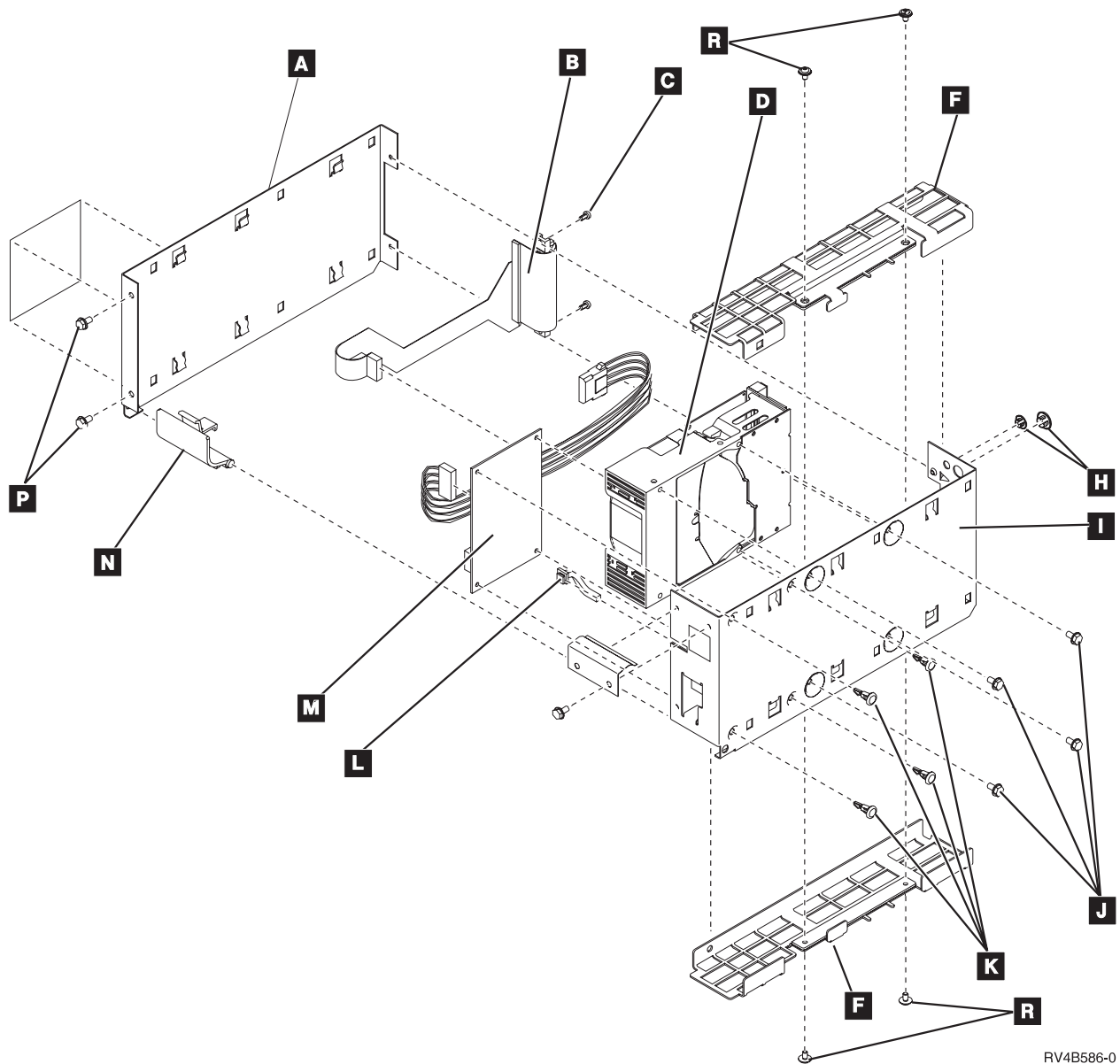


Figure 20. New style disk unit tray assembly for disk types 6105, 6107, 6109 and 6603

16. Remove the top and bottom shield covers **F** of the new disk unit assembly by doing the following:
  - a. Loosen the screws **C**.
  - b. Loosen the screws **P**.
  - c. Insert the tip of a flat blade screwdriver at points **Q** on old style trays. Remove screws **R** on new style trays.
  - d. Rotate the screwdriver to push the shield cover **F** away from the disk carrier assembly cover **A** and the tray **I**.
  - e. Repeat steps 16c and 16d to remove the other shield cover.
17. Separate the disk carrier assembly cover **A** from the tray **I** by removing 4 screws:
  - 2 hex screws **P** at the blue latch end
  - 2 Torx screws **C** at the SCSI Connector end

Move latch to open position to access the screw.

Set the screws aside for they will be used later in step 33 to reassemble the tray assembly.

18. Before removing the blue latch **N**, note its installed position between the pivot holes that are on the disk carrier assembly cover and tray.
19. Set the disk carrier assembly cover and blue latch aside.
20. Place the tray **I** on the ESD mat with the card and cables facing up.
- 21.

**Attention:** Do not touch the circuit cards on the disk unit.

22. Disconnect the power and address cable asm from the power card **M**.
23. Disconnect the flex-type SCSI cable asm **B** from the power card.
24. Hold a corner of the power card and with a plier squeeze the locking tabs of the plastic fastener until the tabs allow the corner of the power card to be lifted free from the fastener.
25. Repeat step 24 for the remaining corners of the card.
26. Note the alignment of the card **M**.
27. Note the alignment of the light pipe **L** on the LED on the card.
28. Exchange the power card **M** and remove/install the light pipe **L**.
29. Connect the power and address cable asm to the power card **M**.
30. Connect the flex-type SCSI cable asm **B** to the power card.
31. Find the disk unit assembly cover **A** align it with the tray **I**.
32. Place the blue latch **N** in its original installed position in pivots holes.
33. Using the four (4) screws **P** and **C** that were removed in step 17 to fasten the disk unit assembly cover **A** to the tray assembly **I**:
  - 2 hex screw **P** at the blue latch end
  - **Keep the latch in its open position to fasten the screw.**
  - 2 Torx screws **C** at the SCSI Connector end
34. Take each shield cover **F** that was removed in step 16 on page 131 and carefully align it between the disk unit assembly cover **A** and tray **I**. Press shield cover into place with the palms of you hand at each end.
- 35.

**Attention:** Do not install a disk unit kit with the keyed plugs **H** removed. Damage to disk unit and customer data loss will occur.

The conversion is complete. Continue with step 37.

36. **Attention:** For a converted disk unit that will be installed in Models 600, 610, 620, S10, S20, 620 System Unit and S20 Expansion Unit, use the AS/400e server 600, 620, 720, S10, and S20 Problem Analysis, Repair and Parts, SY44-5955-05:
  - **Parts Listing, Assembly 4-** to assemble the disk unit with conversion kit
  - **Locations and Addresses-** to locate the assembled disk unit for your model's configuration.
37. Install the disk unit.

If disk units are to be installed in a different disk position go to HELP A810, step 77 on page 109, "How to Determine Where to Locate and Install the disk unit tray assembly".

38. Do you have more disk units to convert?

No      Yes

↓      Go to step 8 on page 127.

*Return to the printed instructions or to the page that sent you here.*

## A870: How to Convert Tape Units for use in a Model 6xx/7xx/Sxx system

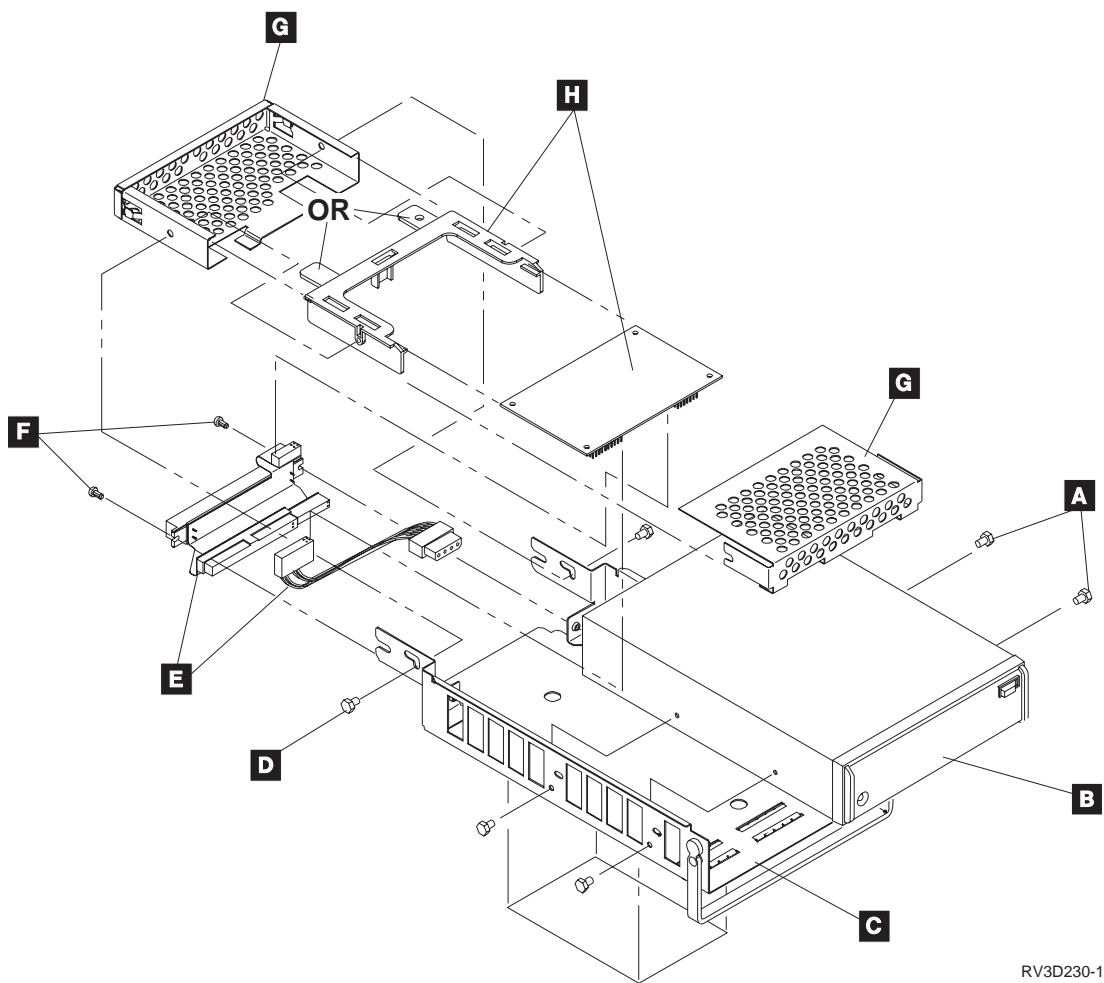
Verify that you have the correct conversion kit.

### Notes:

1. There are different conversion kit features to support the different tape unit types. The different conversion kits also differentiate between tape units you are installing in a SPCN system and those you are installing in a Non-SPCN system.
2. Inspect the conversion kit that was received with MES shipment. Position that kit so the handle faces you and the connector faces the rear. Each type of kits is keyed with a tab on the card holder assembly at the connector end. The SPCN (regulated) kit will have this tab located on the right. The Non-SPCN (non-regulated) kit will have this tab on the left. See item **H**, the card and holder, of the tape kit in step 5 on page 133. The tab is to prevent the installation of a kit that is not compatible with the power feature of the system. Do not force the assembly if it does not install easily. The tab and the tape unit device will be damaged if it is not compatible with the power feature of the system.
3. You MUST do a conversion for the Tape features that are shown in the table when you upgrade the Model 300 System Unit without SPCN to a Model 6xx/7xx/Sxx.

You can reference service procedures in these steps. You will need a copy of the *Repair and Parts* manual for your system.

1. Ensure that you have powered off the system. See Powering Off the System in the "Service Referenced Procedures" of the *Repair and Parts* manual for your system.
2. Remove the front cover. See Covers, in the "Removal and Installation Procedures" of the *Repair and Parts* manual for your system.
3. Remove the tape unit to be converted. See Removable Media, in the "Removal and Installation Procedures" of the *Repair and Parts* manual for your system.
4. You will exchange the power card in the trap tray assembly.
5. The tape unit assembly.



RV3D230-1

6. Remove the two (2) screws **D** that fasten the card assembly **G** to the tray **C**. Notice how the card assembly fastens to the tray. The card assembly will be reinstalled in step 16 on page 135.
7. Slide the top and bottom shield covers of the card assembly **G** apart.  
Note that the top shield cover slides under the bottom shield cover tabbed edges.
8. Unplug the SCSI flex cable and power cable **E** from the card assembly.  
Note the cable positions before unplugging them. After exchanging the card, the cables will be reconnected.
9. Separate the card and its holder **H**.
10. Find the new card.
11. Find the new holder

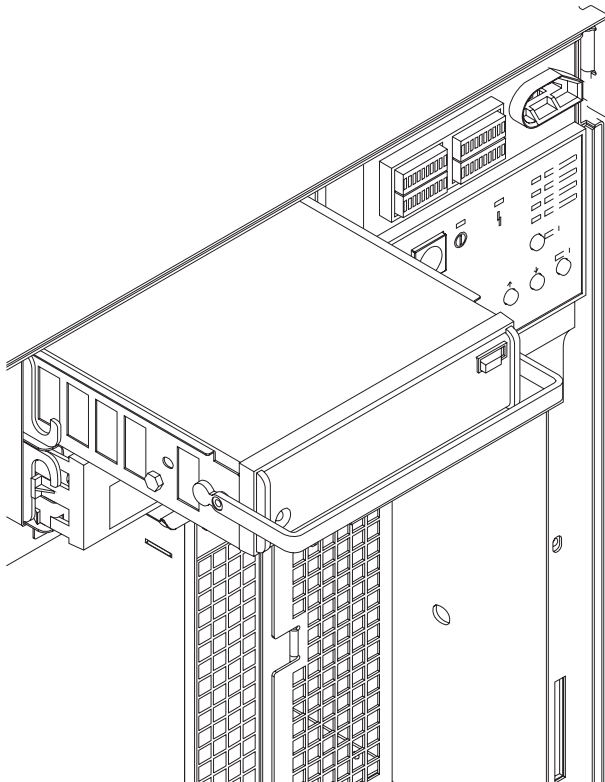
**Note:** The SPCN (regulated) kit will have its keyed tab located on the right.  
You can also identify this tab by a centered hole.

12. Install the new card into the new holder as shown **H**.
- 13.

**Attention:** Be careful not to bend any pins while connecting this cable.

Connect the SCSI flex cable and power cable **E** to the card assembly.

14. Reassemble the card assembly by carefully sliding the top-shield cover **G** into the bottom-shield cover **G**. The top shield cover should slide under the top tabbed edges of the bottom shield cover.
15. Find the two (2) screws **D** that were removed in step 6.
16. Attach the card assembly **G** to the tray. Start and hand tighten the two screws **E**.
17. Lift the tape unit and tray assembly by the card assembly **G** and tray handle.  
Gently turn it over and lay it back unto the working surface.
18. Press and hold the card assembly **G** on the working surface and tighten the two (2) screws **D**.  
This action will ensure that the card assembly is now flushed against the working surface. This will accomplish a critical alignment that will ease the installation of the tape unit assembly into the system.
19. Find an available tape unit device installation position.
20. Reinstall the tape unit assembly.



RV3B411-0

*Return to the printed instructions or to the page that sent you here.*

## A980: How to change tape speeds on a 2440 Tape Drive

When you are using a 2440 tape drive with the dual speed feature as the alternate IPL device and are using 6250 bits/inch (bpi) media, you may get a system reference code (SRC) of A100 1934 or B100 1934 on stage 1 hardware, or A12X 1933 on stage 2 hardware. Either SRC means the 2440 must be set to single speed mode.

When you are asked to “load the first tape volume”, do the following:

1. Load the tape on the 2440.
2. Press Reset on the 2440.
3. Open the front door of the 2440, and, on the diagnostic panel, enter:
  - a. **CMD-9-2-EXEC**
  - b. **CMD-9-3-EXEC**
  - c. **CMD-6-6-EXEC**
  - d. **1-EXEC**

The AS/400 control panel shows **A0** If the control panel shows **E08**, you have a single speed 2440 and can ignore this procedure.

4. Close the front door of the 2440.
5. Press the Online pushbutton on the 2440.
6. When you are prompted to load the second tape volume, reset the 2440 to dual speed mode, by doing the following:
  - a. Load the second tape on the 2440.
  - b. Press Reset on the 2440.
  - c. On the 2440 diagnostic panel, enter:
    - 1) **CMD-9-2-EXEC**
    - 2) **CMD-9-3-EXEC**
    - 3) **CMD-6-6-EXEC**
    - 4) **0-EXEC**

The AS/400 control panel shows **A0**.

7. Close the front door.
8. Press the Online pushbutton on the 2440.

*Return to the printed instructions or to the page that sent you here.*

---

## Adding an Expansion Unit

### A830: How to Install a Disk Expansion Unit

Find the feature code of the disk expansion unit from the following table.

#### Storage Expansion Unit Placement

*Table 6. Storage Expansion Unit Placement*

Storage Expansion Unit Feature	Number of Disk Units	Tower Application	Page Reference
FC 5052	16	FC 5082, FC 5080, FC 5072, FC 5070	16 unit  See “16-Disk Unit Expansion, FC 5052, FC 5057, FC 5058” on page 141

Table 6. Storage Expansion Unit Placement (continued)

Storage Expansion Unit Feature	Number of Disk Units	Tower Application	Page Reference
FC 5055	8	Model 640, S30, System Units	See "8-Unit Disk Expansion, FC 5055" on page 138  See: Remove and Install, 64x/S3x Storage Expansion Unit, in <i>AS/400e series 640, 650, 730, 740, S30, S40, and SB1 Problem Analysis, Repair and Parts</i> .
FC 5057	16	Model 650, S40, SB1 System Units	16 unit  See "16-Disk Unit Expansion, FC 5052, FC 5057, FC 5058" on page 141
FC 5058	16	FC 5083, FC 5073, FC 5081, FC 5071	16 unit  See "16-Disk Unit Expansion, FC 5052, FC 5057, FC 5058" on page 141

## Installation

1. Service procedures will be referenced in these steps. You will need a copy of the *AS/400e series 640, 650, 730, 740, S30, S40, and SB1 Problem Analysis, Repair and Parts*, SY44-5956-05.
2. Power off the system.  
See Powering Off the System in the "Service Referenced Procedures" of the *AS/400e series 640, 650, 730, 740, S30, S40, and SB1 Problem Analysis, Repair and Parts*.
3. Disconnect the power cord.

**Note:** The Model 650/S40/SB1 system unit has two power cords

4. Remove the front covers.  
See Covers in the "Removal and Installation Procedures" of the *AS/400e series 640, 650, 730, 740, S30, S40, and SB1 Problem Analysis, Repair and Parts*.
5. Remove the top cover.
6. There are five feature code configurations that are based on disk unit capacities.

### 8-Unit Disk Expansion installation

Go to "8-Unit Disk Expansion, FC 5055" on page 138.

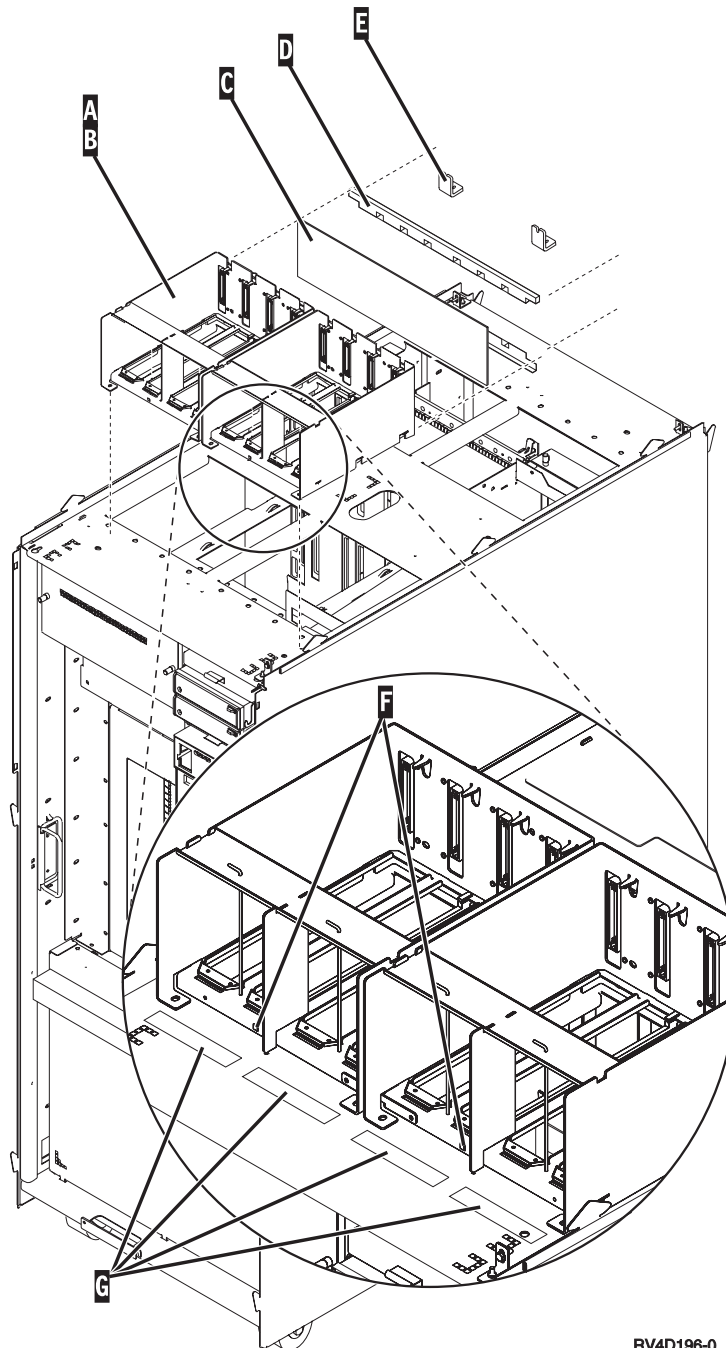
### 16-Unit Disk Expansion installation

Go to "16-Disk Unit Expansion, FC 5052, FC 5057, FC 5058" on page 141.

## 8-Unit Disk Expansion, FC 5055

### CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)



RV4D196-0

1. Power off the system and unplug the power cord. Verify that Continuous Power Mainstore is not active.
2. Remove the top cover front and rear EMC shields (see the *Repair and Parts* manual).
3. Loosen the screws in the top cover.
4. Remove the top cover.
5. Find 2 DASD enclosures, **A** and **B**

6. Install light pipe, **G** into each DASD enclosure, **A** and **B**.
7. Place 2 stiffeners, **D** on the DASD enclosures.
8. Attach backplane, **C** to the DASD enclosures with 16 screws.
9. Apply storage device slot location labels (K01- K04) and (K05 - K08) on the DASD enclosure's front edge.
10. Place the assembled DASD enclosures and backplane on top of the system unit frame.

**Note:** The two DASD enclosures are now one assembly; it will now be referred to as the 'DASD cage'.

11. Use 4 screws and hand-tighten the DASD cage, **A** and **B**, and backplane assembly **C**.
12. Attach two rear brackets, **E** to the top of the system unit frame
13. Secure the two rear brackets, **E** to the DASD cage, **A** and **B** with 2 screws.
14. Ensure that you tightly mount the DASD cage, **A** and **B** to the top of the system unit frame. (Tighten the 4 screws used in step 11.)
15. Figure 21 on page 140 shows the logical cable and terminator connections in the system unit and in for the FC 5055 8-disk unit storage expansion unit:

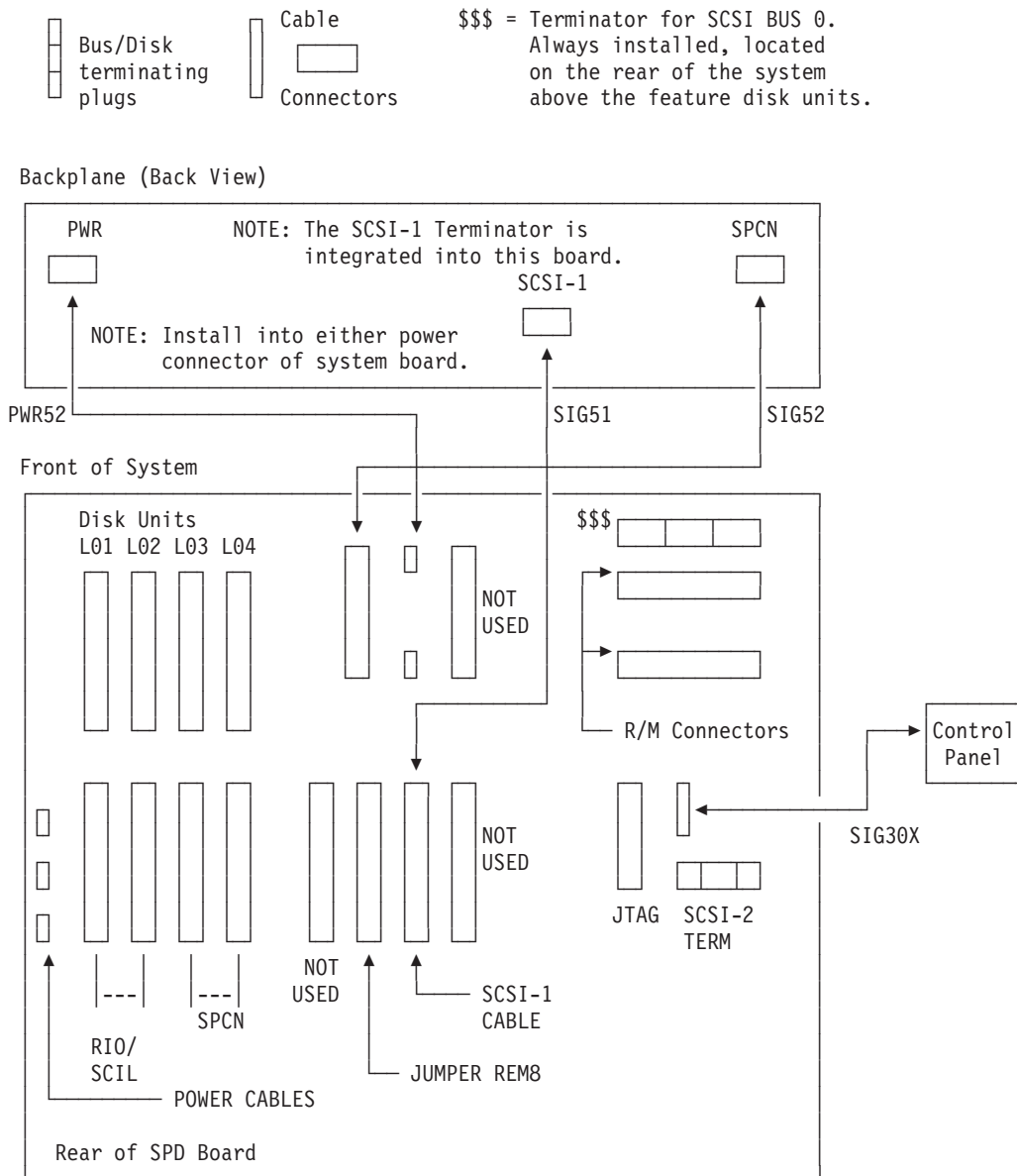
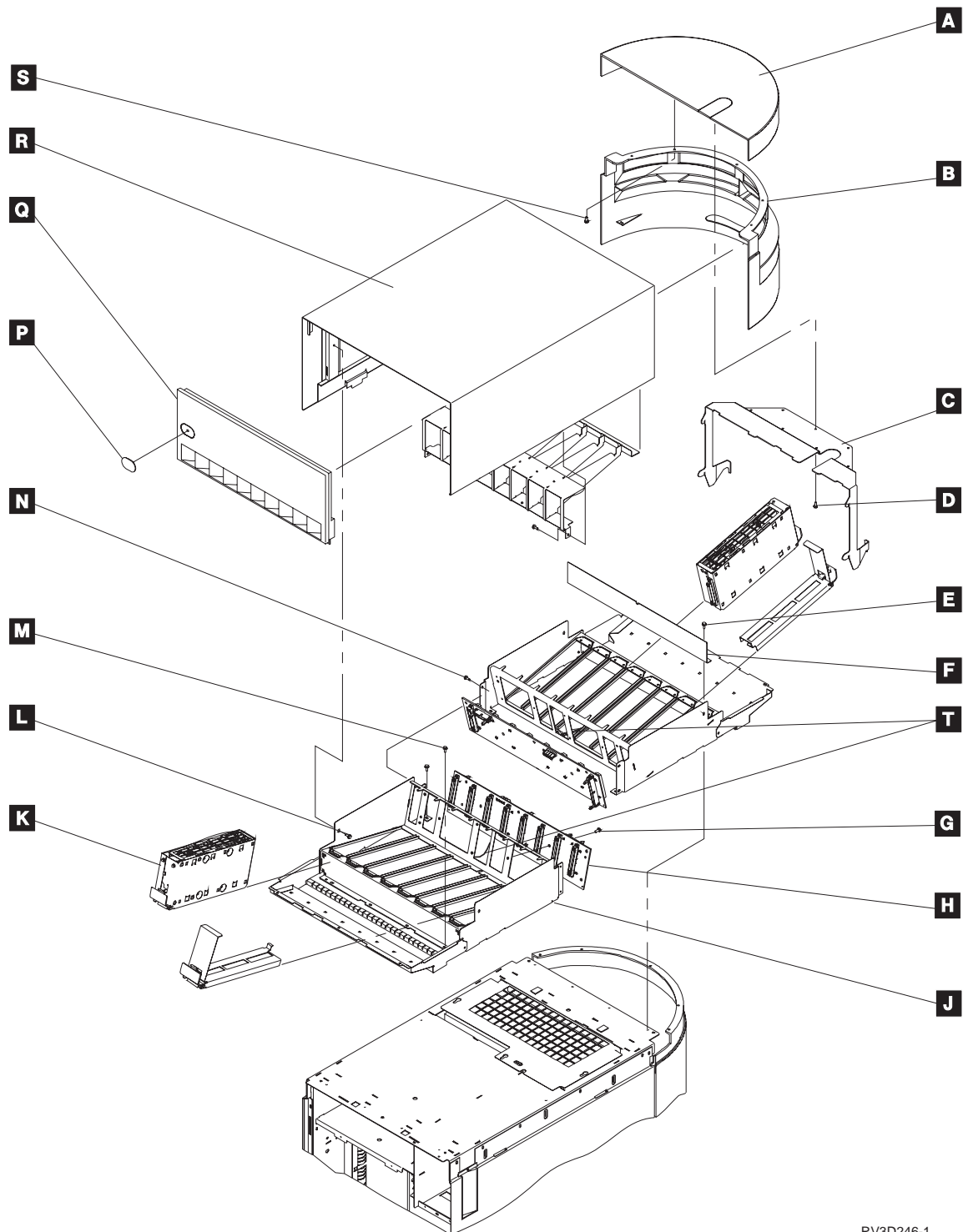


Figure 21. 8-Unit Storage Expansion Unit Cabling (FC 5055)

- Connect the **SCSI** cable, **SIG51**
  - Connect the **Power** cable, **PWR52**
  - Connect the **SPCN** cable, **SIG52**
16. Ensure that the terminator **TRM50** is disconnected to the backplane.
  17. Install the storage devices in the DASD cage.
  18. Install the top cover.

*Return to the printed instructions or to the page that sent you here.*

# 16-Disk Unit Expansion, FC 5052, FC 5057, FC 5058

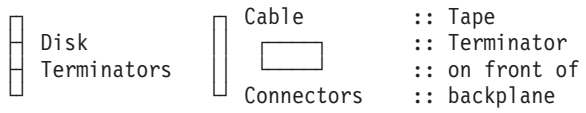


RV3D246-1

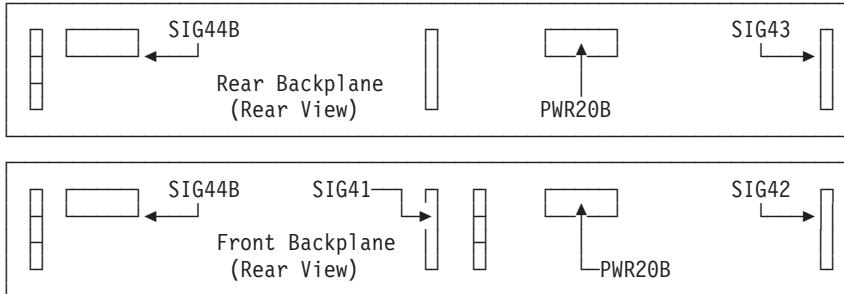
Refer to these drawings for cabling information:

- Figure 22 on page 142.
- Figure 23 on page 143.
- Figure 24 on page 144.

## A830



### 16-Unit Disk Expansion



### Connections to a FC 5072 or FC 5082

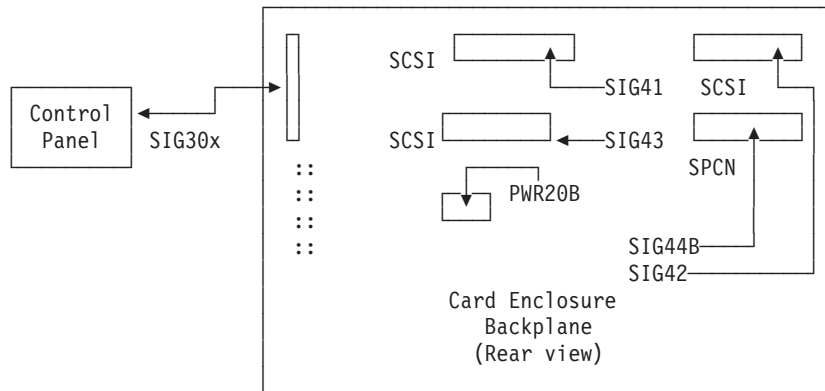


Figure 22. 16-Unit Disk Expansion, FC 5052 Cabling

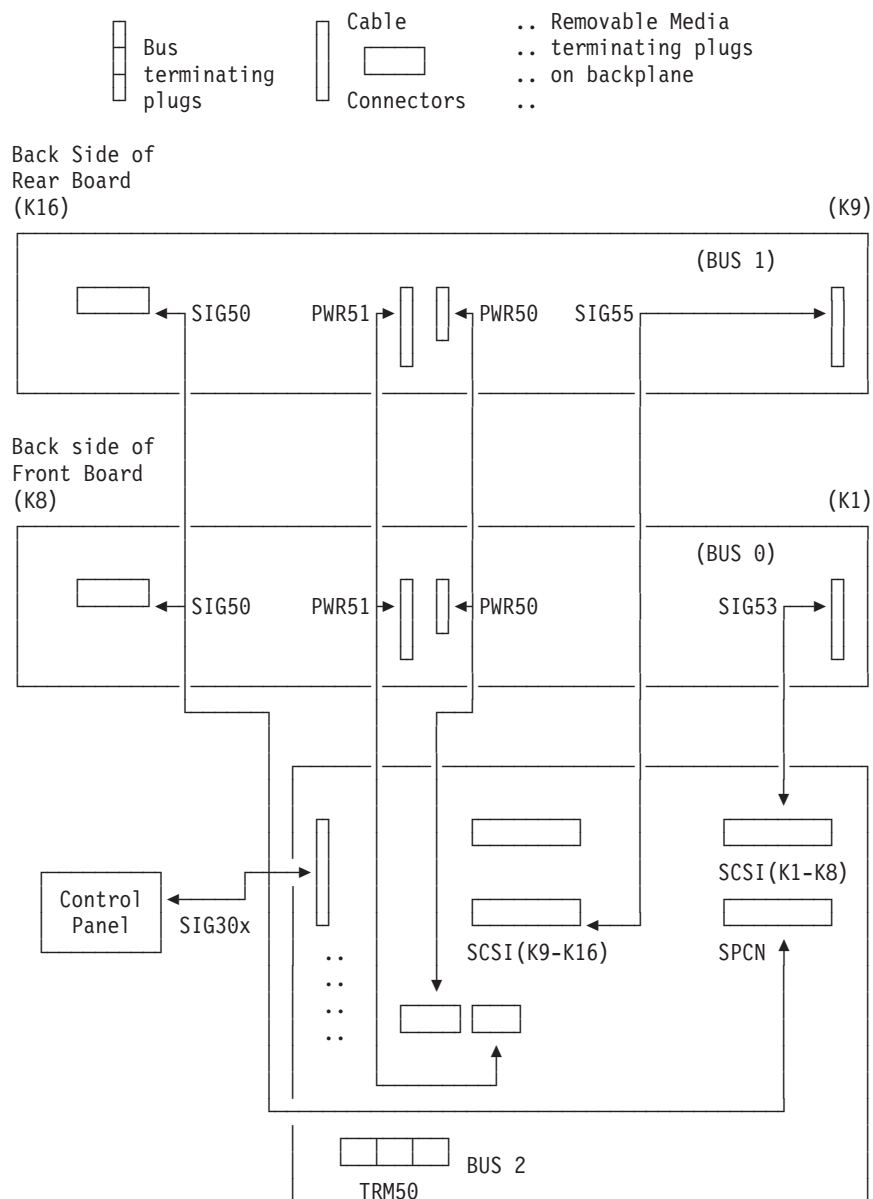


Figure 23. 16-Unit Disk Expansion, FC 5057 Cabling

## A830

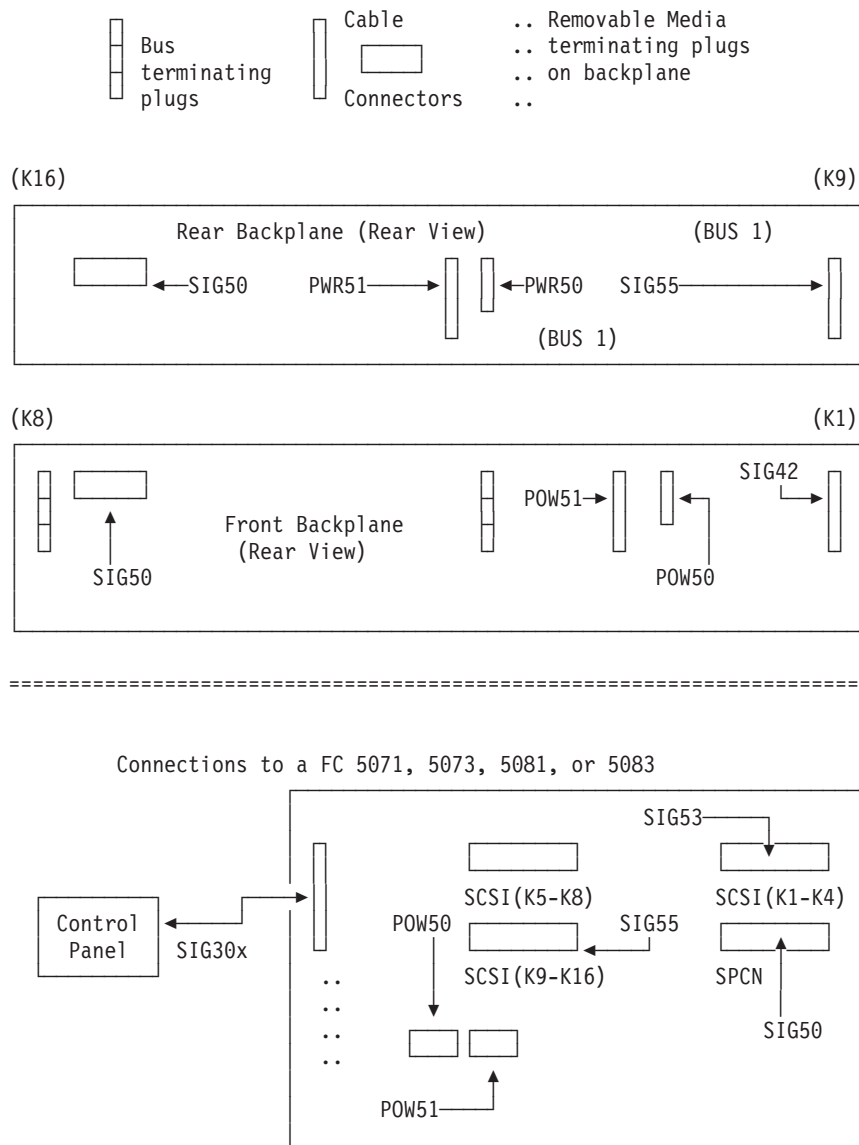


Figure 24. 16-Unit Disk Expansion, FC 5058 Cabling

1. Install the FRONT disk expansion backplane **H** to disk expansion tray assembly **J** using 6 screws **G**. The remaining screws will be installed with the terminator brackets.
2. Install the REAR disk expansion backplane to disk expansion tray assembly **N** with 7 screws **E**. The remaining screw will be installed with the terminator brackets.
3. Install the 2 **terminators** to the front backplane using terminator brackets. Install each bracket by using 1 screw.
4. Install the 1 **terminator** to the rear backplane (left side) by using the terminator bracket. Install the bracket by using 1 screw.
5. Install the light pipes **T** to each tray assembly.

Install the bent end of the light pipe unto the light emitting diode (LED) on the backplane **H**. Align the straight end of the light pipe with the rail that is between disk position 4 and 5. Insert the light pipe into the front grill.

6. Place the front assembly **J** with the two terminators on the top front of the system unit expansion frame.
7. Install the front tray assembly **J** to the system unit expansion frame by using 6 screws **M**.
8. Install the following cables in the order listed.
  - a. Install the SCSI cable **SIG42** disk expansion backplane to system unit expansion backplane.
  - b. Install the SCSI cable **SIG41** disk expansion backplane to system expansion backplane.
  - c. Install the SPCN cable **SIG44B** disk expansion backplane to system expansion backplane. This is a "Y" cable; the other end will be attached later in step 11.
  - d. Install the power cable with two position connectors **PWR20B** from system unit expansion backplane to system unit expansion backplane. This is a "Y" cable; the other end will be attached later in step 12.
  - e. Install the power cable with the three-position connector
  - f. Install the SCSI cable **SIG43** to disk expansion backplane only. The remaining end will be attached later in step 13.
9. Install the blower plenum to the top of system unit expansion frame by using 3 screws.

**Note:** The blower plenum is shown as the 'grill' area on the top rear of the system unit.

10. Place the rear tray assembly **N** in close proximity of the trays final position.
11. Install the remaining end of the SPCN cable **SIG44B**
12. Install the remaining end of the power cable **PWR20B**
13. Install the SCSI cable **SIG43** to rear backplane.
14. Place rear tray assembly on the system unit frame with the DASD rails facing the rear of the system.
15. Install the rear tray assembly **N** to the system expansion unit frame by using 8 screws **M**.

**Make sure the rear air dam **F** is attached to the rear tray asm, using 4 of the screws **E** that attach the rear tray asm to the frame**

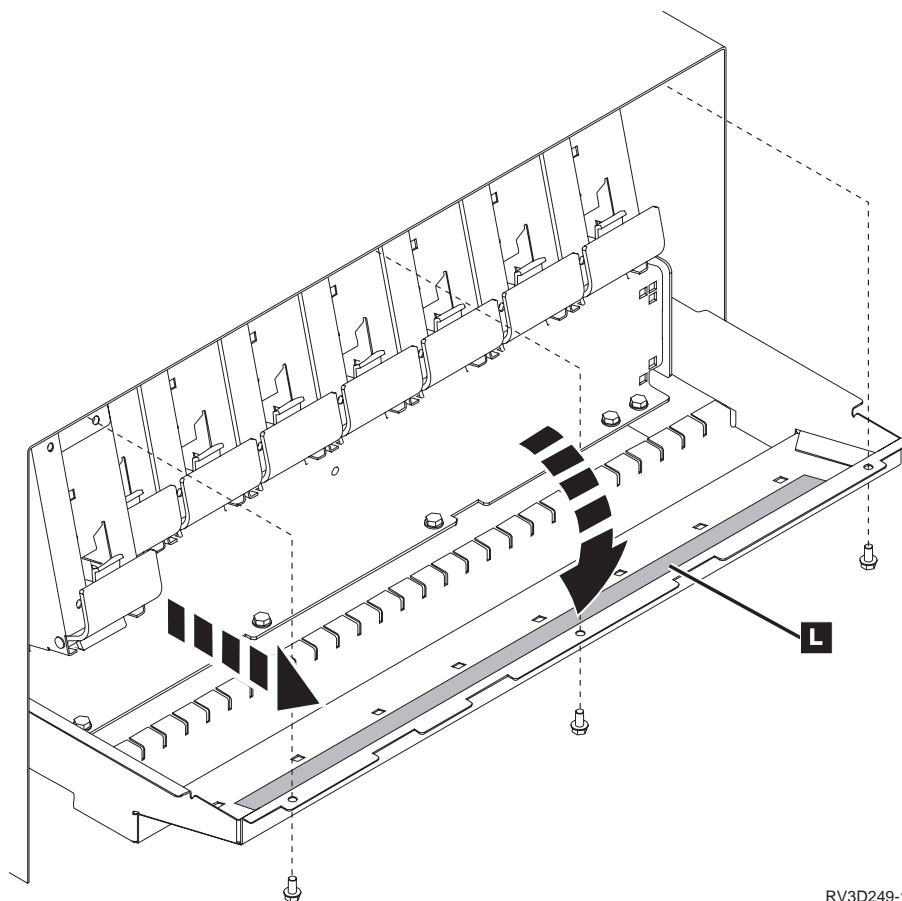
The other 4 screws connect the front tray **J** and rear tray **N** together, 2 on each side.

16. Is the system you are working with a model 53x?

Yes      No

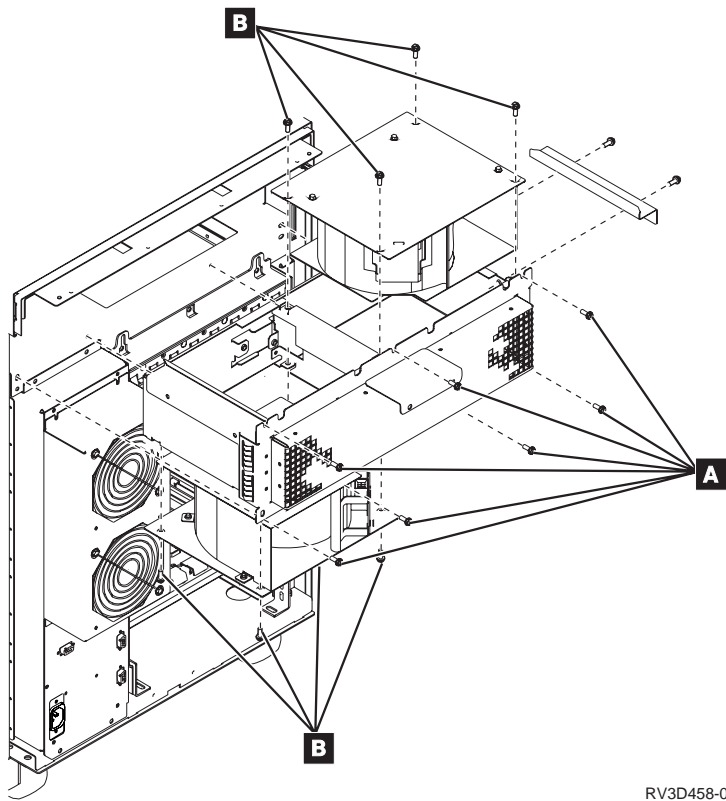
↓      Go to 18.

17. Install Safety Label **L**, PN 87G6353, on the inside of the rear tray cover assembly. This label is already installed on the inside of the front tray cover assembly.



RV3D249-1

18. Place disk expansion cover **R** upside down.
19. Install the air vane guide (under **R** in figure) to disk expansion cover using 4 screws.
20. Position top cover on system unit expansion frame, use alignment pins to guide cover into position.
21. Install the cover with 4 screws.



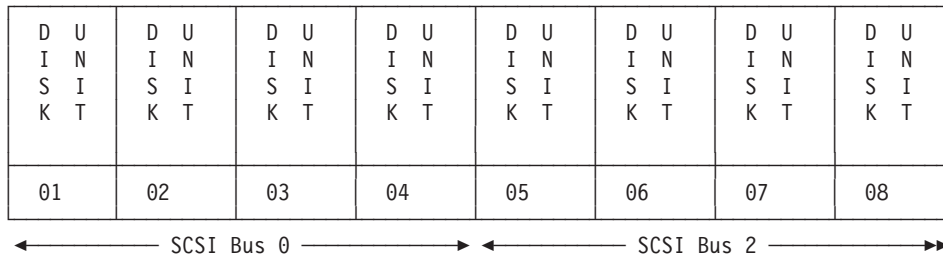
RV3D458-0

Figure 25. Base system blower assembly

22. Add blower to the base system blower assembly.
  - a. Remove filler plate from base blower assembly and add blower.
  - b. Install the blower with 4 screws **B** in Figure 25.
23. Slide blower assembly into rear of system, fasten with 7 screws **A** in Figure 25.
24. Use the Figure 26 as a guide for installing disk units.

## A830

### Front View



### Rear View

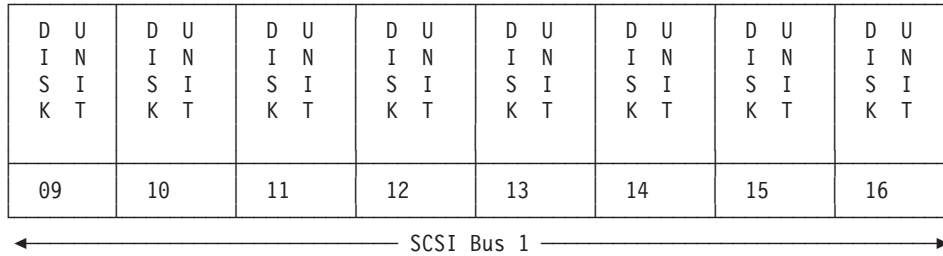


Figure 26. 16-Unit Disk Expansion Install Chart

25. This ends the 16-Unit Disk Expansion installation.

*Return to the printed instructions or to the page that sent you here.*

## Adding Features to Cards

### A340: Working with Integrated Netfinity Server cards

There are two types of SPD Integrated Netfinity Server cards. Use the following table to determine the instructions for the card you are working with.

Integrated Netfinity Server feature code	Reference
6616	See "For the 6616 Card:".
6617	See "For the 6617 Card:" on page 149.
285x	See "For the 285x PCI Integrated Netfinity Server Features:" on page 150.

#### For the 6616 Card:

The 6616 card accepts up to two of the following IOAs in any order:

- FC 6181 — Ethernet/IEEE\_802.3 IOA, (no cable with feature)
- FC 6149 — Token-Ring 16/4 Mbps IOA, (with 2.4m cable)

To install SPD IOAs:

1. Install SPD IOAs into the 6616 in any order. The left IOA slot is port 1; the right IOA slot is port 2.
2. Label and connect cables, as required.

6149 Token-Ring Adapter Card	6181 Ethernet Adapter Card
------------------------------	----------------------------

1. Cable PN 6339098 - Top connector <b>Note:</b> This cable is shipped with the system. <b>OR</b>  2. RJ-45 telephone line cable - bottom connector <b>Note:</b> The telephone line cable is not shipped with the system.	1. Ethernet cable - top connector <b>OR</b>  2. RJ-45 telephone line cable - bottom connector  <b>Note:</b> The Ethernet cable or the telephone cable are not shipped with the system.
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### For the 6617 Card:

The 6617 card supports the following PCI IOA card types:

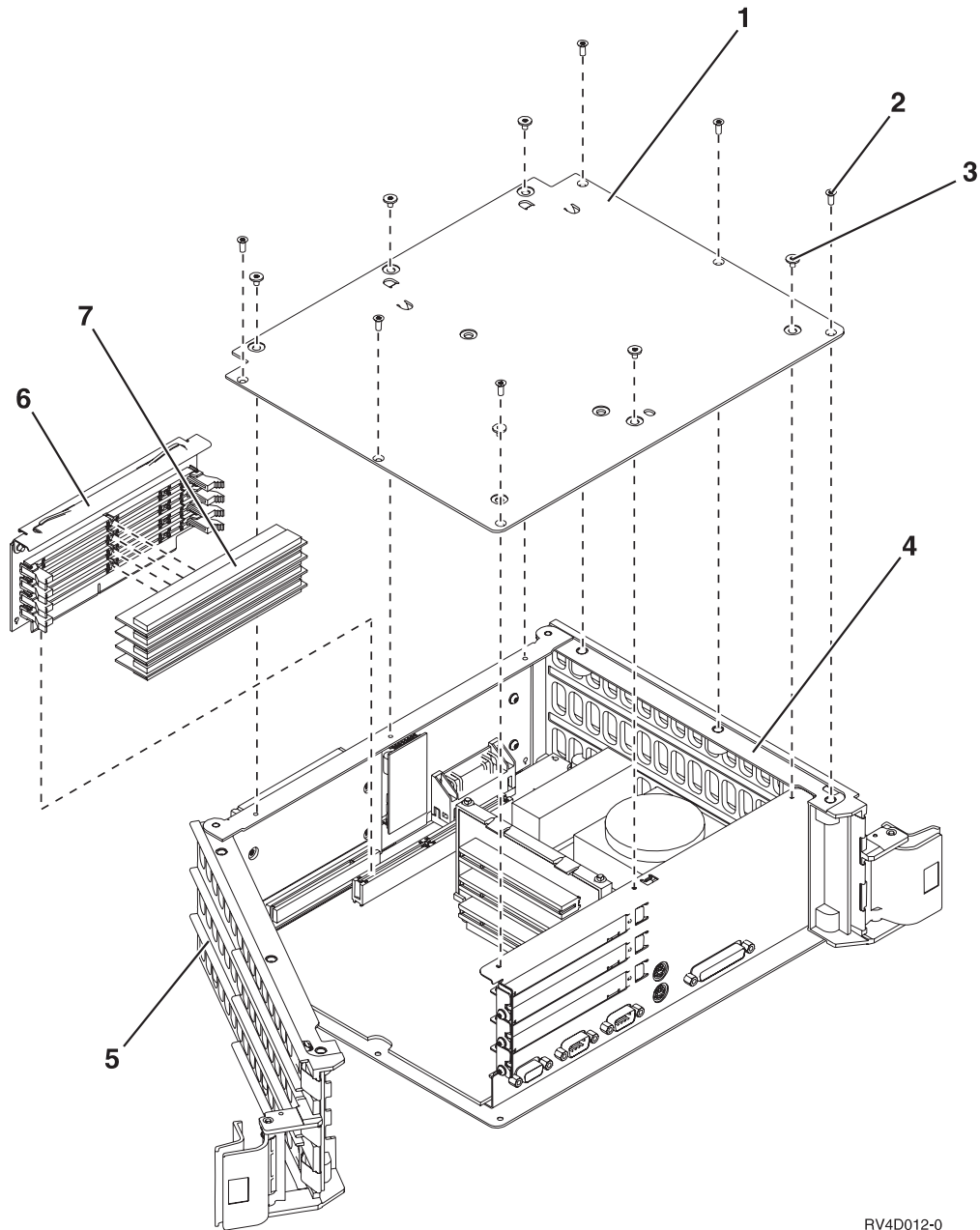
- **2723** —PCI Ethernet IOA
- **2724** —PCI 16/4 Mbps Token-Ring IOA
- **2838** —PCI 100/10 Mbps Ethernet IOA

**Note:** For instructions on connecting cables to these PCI IOA cards, see “A060: How to connect cables to cards” on page 48.

**Note:** If the **NT operating system** is installed on the Integrated Netfinity Server, the Video/Display and the Keyboard/Mouse should be connected.

Open the top of the card case in order to install or replace PCI cards.

1. Remove the 6 screws that hold the upper rail guide.
2. Pivot the upper rail guide to provide access to the PCI card slots.
3. Install 1, 2, or 3 PCI cards in the slots. Install cards starting with the location closest to the motherboard (slot A).



RV4D012-0

Open the side of the card case in order to install memory (DIMMs).

1. Remove the 12 screws that hold the side cover.
2. Remove the memory DIMM riser card.
3. Install 1, 2, 3, or 4 memory DIMMs into the riser card. Install memory starting with the location closest to the motherboard. Memory can be intermixed and placed in any order.
4. Reinstall the DIMM riser/memory assembly.
5. Reinstall the 12 screws that hold the side cover. Do not overtighten the large screw heads.

### For the 285x PCI Integrated Netfinity Server Features:

The 285x Integrated Netfinity Server feature supports the following PCI IOA card types:

- 2723 —PCI Ethernet IOA
- 2724 —PCI 16/4 Mbps Token-Ring IOA
- 2838 —PCI 100/10 Mbps Ethernet IOA
- One of the above IOAs must be present.

**Note:** For instructions on connecting cables to these PCI IOA cards, see “A060: How to connect cables to cards” on page 48.

**Note:** If the **NT operating system** is installed on the Integrated Netfinity Server, the Video/Display and the Keyboard/Mouse should be connected.

PCI IOAs are controlled by the Integrated Netfinity Server as defined by the backplane for that system.

Additional Integrated Netfinity Server Memory can be installed (DIMMs):

1. Install 1, 2, 3, or 4 DIMMs into the Integrated Netfinity Server 2850 processor card. Install them starting with the location closest to the motherboard connector.
2. DIMMs can be intermixed and placed in any order.

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## Working with OptiConnect

### A350: OptiConnect configuration rules

#### OptiConnect cabling rules:

- All the normal bus cabling rules apply for OptiConnect. From a 2688 or 2686 OLP, the cable from the top slot must connect to the top slot of an OptiConnect receiver card or expansion tower. The cable from the bottom slot must connect to the bottom slot of an OptiConnect receiver card or expansion tower.
- OptiConnect cables can not be hot plugged. The system must be powered down at connection time.

#### OptiConnect HUB rules:

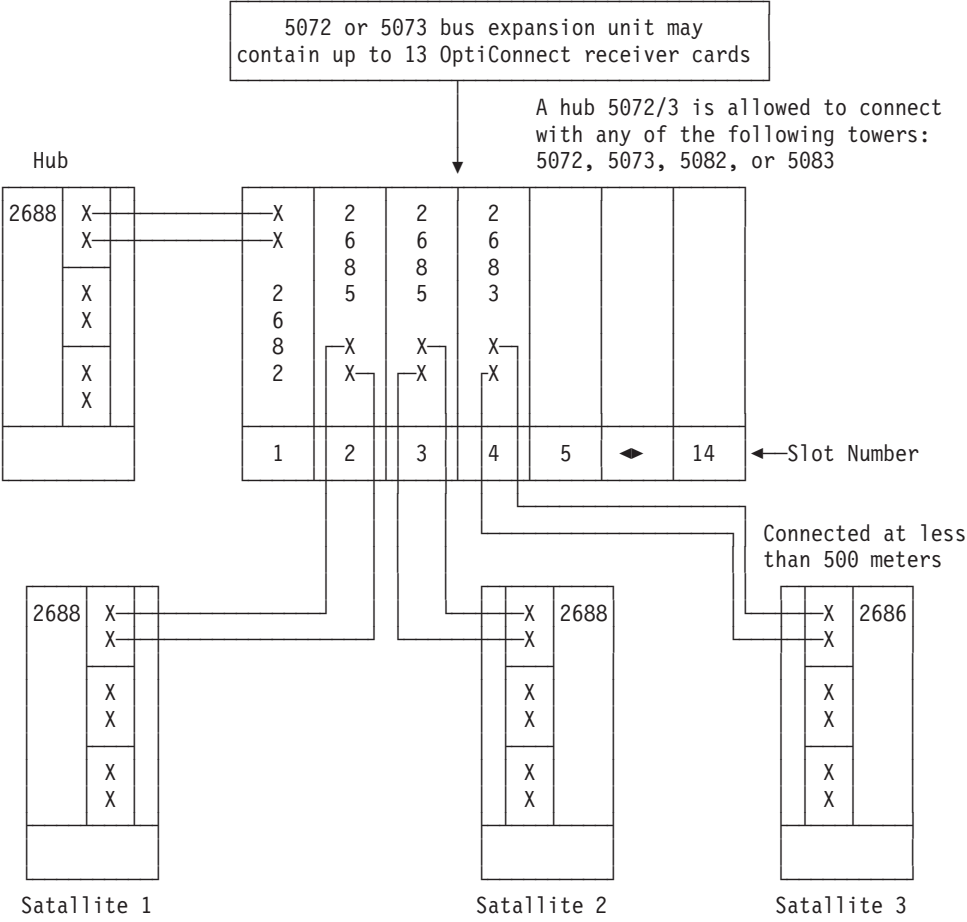
- A hub will always have 1 or more 5072 and/or 5073 units dedicated to OptiConnect cards. This means that the internal slots must contain only OptiConnect cards. It does not prevent the expansion tower from being linked to another expansion tower.
- If there are dual hubs, the 2688 in each hub that connects to a 2685 OptiConnect receiver card in the other hub is limited to the same rules as the 2688 in a satellite.

#### OptiConnect satellite rules:

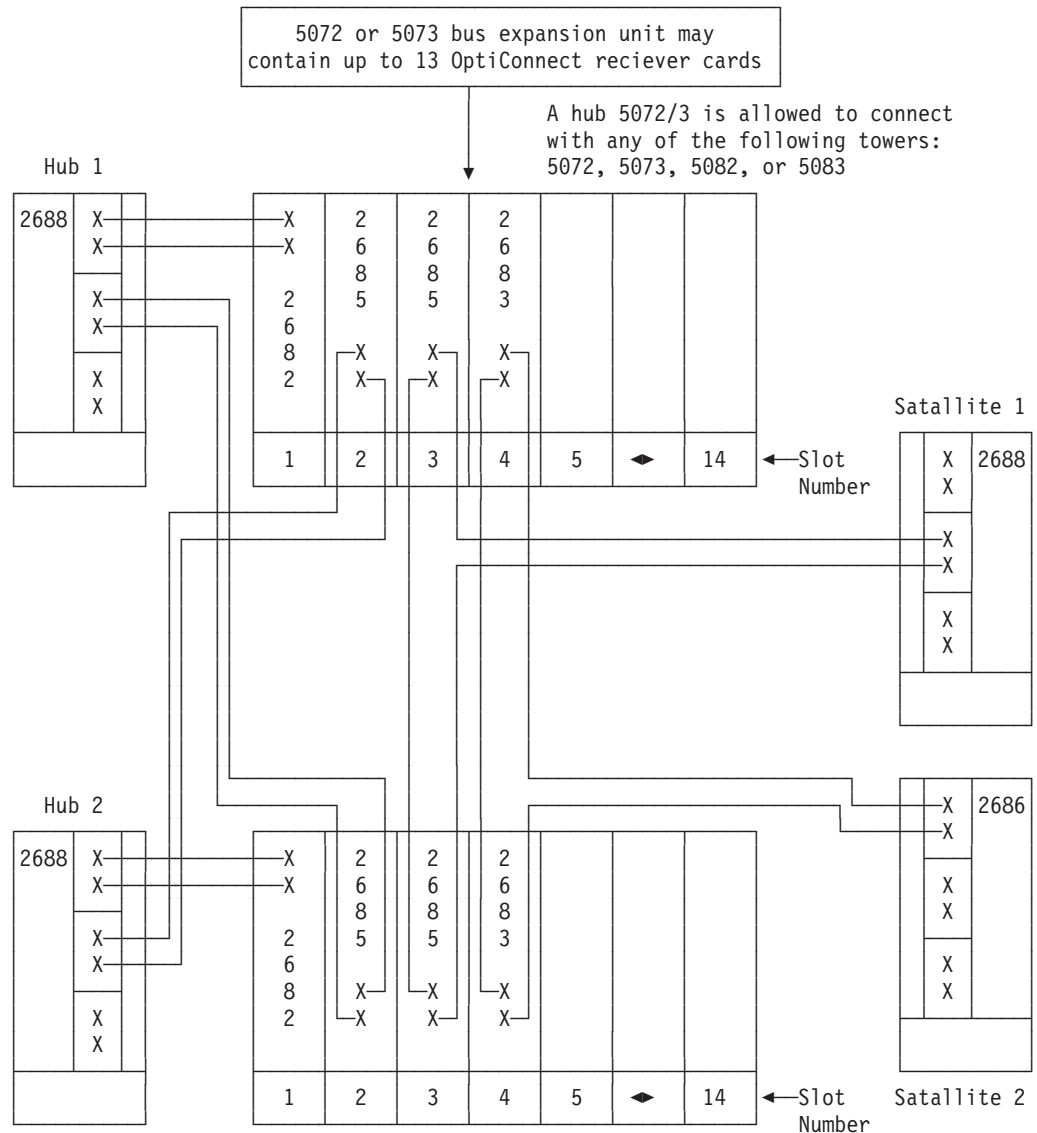
- A 2688 OLP can attach to a maximum of 2 2685 OptiConnect receiver cards.
- A 2686 OLP can attach to a maximum of 2 2683 OptiConnect receiver cards.
- A 2688 OLP may not be connected to a 2685 OptiConnect receiver card and a 2682 receiver card in an expansion tower at the same time. (2688 is dedicated to OptiConnect)
- 2688 OLP cards are permitted in 500/510 and 50S systems when they are using OptiConnect.

### A360: OptiConnect cluster examples

Here are two examples of a cluster using OptiConnect. This drawing shows a 4 system single bus cluster.



The drawing below shows a 4 system dual cluster.



## Checking and Printing System Information

### A033: How to check the customer-supplied power source

There are situations when the new system will not operate on the existing power circuit available. Analyze the power circuit requirements and plug requirements to ensure that appropriate physical preparation is complete and the electrical connections are not hazardously defective. See specifications in the physical planning guide (at <http://www.as400.ibm.com/tstudio/planning/plngstrt.htm> or on the Information Center CD).

We recommend that each AS/400 system unit or expansion unit connect to a dedicated electrical outlet. This reduces the possibility of power disruptions that are caused by other equipment on the same circuit.

Before starting the installation verify that correct voltage and grounding are present. Make the following checks by using a multimeter that is rated for at least 600VAC:

- Determining Circuit Phase
- Identifying the Grounding Contact
- Verifying that Correct Voltage Exists Between Power Contacts
- Confirming the Grounding Contact's Integrity

Throughout this procedure the term Grounded, Grounding, and Ground mean the same as Earthed, Earthing, and Earth, respectively. Note that an adequate grounding path is necessary for safe operation of the equipment. None of the grounding wires should be connected to the neutral wiring at the receptacle or at any power distribution panel except the building main power distribution panel or a separately derived power source.

You must know whether the receptacle you are evaluating is on a three-phase circuit or single-phase circuit in order to decide which steps below are applicable. To decide if the receptacle circuit is three-phase or single-phase, information in the following table may be helpful. If none of the categories listed applies to your situation, consult an electrician who is knowledgeable about the electrical wiring conventions of the building you are working in. See specifications in the physical planning guide (at <http://www.as400.ibm.com/tstudio/planning/plngstrt.htm> or on the Information Center CD).

### Determining Circuit Phase

If...	Then...
The plug that fits in the receptacle has only three prongs.	Receptacle is <b>Single-Phase</b> .
<p>The plug that fits in the receptacle has four prongs and the resistance between two of them is found to be less than 1 ohm when tested with an ohmmeter.</p> <p><b>Attention:</b> Be sure to test this resistance on a plug attached to a power cord and NOT on the receptacle. Voltage present in the receptacle can damage your meter when the meter is set to measure OHMS.</p>	Receptacle is <b>Single-Phase</b>
<p>The plug that fits the receptacle has four or more prongs and there is at least 100 ohms of resistance between any of the pairs of pins on the plug.</p> <p><b>Attention:</b> Be sure to test this resistance on a plug attached to a power cord and NOT on the receptacle. Voltage present in the receptacle can damage you meter when it is set to measure OHMS.</p>	Receptacle is <b>Three-Phase</b>

### Identifying the Grounding Contact

The grounding contact in the receptacle is the contact that connects with the grounding prong on the machine power cord plug. To determine which is the grounding prong on the power cord plug check for one of the following:

1. The grounding prong on the machine power cord plug is the longest prong if the prongs have different lengths.

2. The grounding prong is the one that is connected to the machine frame with less than 1 ohm of resistance when measured with an ohmmeter. The lengths of the prongs on the plug do not matter.
3. If the plug has exactly four prongs, and one pair of pins shows a resistance of less than 1 ohm between them, they are both grounding prongs. The contacts in the receptacle that connects with either of these prongs can be used as the grounding contact for the tests in the procedure.

### Verifying that Correct Voltage Exists Between Power Contacts

#### DANGER

**Dangerous voltage being measured. (RSFTD005)**

1. Turn the customer's branch circuit breakers for this circuit to ON position.

#### 2. Single Phase

Using a voltmeter, verify that the voltage between the two contacts that are not grounding contacts lies within the range given on the power rating label on the machine you are planning to plug into the receptacle. It must be in one of the ranges 100-127VAC or 200-240VAC. (See "Identifying the Grounding Contact" on page 154 to determine which is the grounding contact.)

If the voltage is not within the required range, check the customer's circuit breakers for the receptacle circuit being evaluated to make sure they are all "ON". If the circuit breakers are all on, then the installation planning has not been done correctly and the customer must contact authorized personnel to arrange for the correct voltage to be made available.

#### DANGER

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

**Attention: DO NOT PLUG ANY EQUIPMENT INTO THIS RECEPTACLE UNTIL THE PROBLEM HAS BEEN CORRECTED**

#### 3. Three Phase

- a. Being sure NOT to use the grounding contact, record the voltage between the six possible pairs of contacts that do not include the grounding contact. (See "Identifying the Grounding Contact" on page 154 to determine which is the grounding contact.)
- b. Verify that exactly three of the voltage measurements fall in the range 200-240VAC.
- c. Note which particular contact in the receptacle is in all of the three pairs whose voltage is in the range 200-240VAC. This is the NEUTRAL contact that is mentioned later in this procedure. The other three contacts are the PHASE contacts.

If there are more or fewer than three pairs of contacts (not including the grounding contact) with voltage in the 200-240VAC range, check the customer's circuit breakers. Find the receptacle circuit being evaluated and make sure they are all "ON". If the circuit breakers are all on, then the installation planning has not been done correctly. The customer must contact authorized personnel to arrange for the correct voltage to be made available.

**Attention: DO NOT USE THIS RECEPTACLE UNTIL YOU CORRECT THE PROBLEM.**

**DANGER**

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)

**Confirming the Grounding Contact's Integrity****DANGER**

Dangerous voltage being measured. (RSFTD005)

The steps in this section will confirm that there is no hazardous voltage on the grounding contact in the receptacle. It will also verify that the grounding contact connects to ground.

Perform steps 1 through 4 in section "If Good Ground Reference is Available" if you can make good electrical contact near the receptacle you are evaluating. Have a ground reference that you have reason to believe is electrically connected solidly to ground independent of the grounding of circuits you are verifying. Otherwise perform steps 1 and 2 in section "When no Good Ground Reference is Available" on page 157.

Steps in section "When no Good Ground Reference is Available" on page 157 are provided for use only if you are not able to find grounded conductive parts that are needed to perform steps in section "If Good Ground Reference is Available".

**If Good Ground Reference is Available:**

1. Make sure that the branch circuit breaker in the customer's power distribution panel is set to ON.
2. Identify a bare (not painted, rusty, or insulated) conductive object or surface near the receptacle you are trying to verify. Have reason to believe is well connected to electrical ground. The object needs to be within reach of your meter leads from the receptacle you are verifying. Examples of likely grounded parts are structural metal beams in the building, copper and steel water pipes, electrical conduit, metal raised floor supports, and grounding straps.
3. Verify that the voltage between the grounding contact in the receptacle and the well-grounded conductor that are selected in the previous step is less than 100mvAC. (See "Identifying the grounding contact" below to determine which is the grounding contact.)

**Note:** There is commonly a few millivolt difference between a good ground reference and the grounding contact in the receptacle. If you see absolutely no voltage between them at your first measurement, it is possible that you are not making a good enough contact with either the grounding contact in the receptacle or the ground reference. Try vigorously repositioning the probe contacts in the receptacle and on the ground reference. If you still see voltage less than 100mvAC, continue to the next step 4.

Too high a voltage measured here suggests that the ground contact is improperly connected to a current-carrying part of the building wiring somewhere in the customer's installation.

**UNTIL YOU CORRECT THE PROBLEM, DO NOT USE THIS RECEPTACLE.**

**DANGER**

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

4. Verify that the resistance between the grounding contact in the receptacle and the ground reference conductor near the receptacle is less than 10 Ohms. As when measuring the voltage in step 3, it may be necessary to vigorously reposition the probe tips to make good contact with the ground reference or the ground contact in the receptacle. If vigorous repositioning does not work, you can try plugging the device you are installing into the outlet. Then measure on one of its unpainted frame surfaces. Confirm that the high resistance is not due simply to poor connections at the probe tip in the receptacle.

If this resistance exceeds 10 Ohms and your ground reference conductor is truly a good ground, then the grounding contact in the receptacle is not solidly connected to the true power ground.

**IN THIS CASE DO NOT USE THE RECEPTACLE UNTIL A GOOD GROUNDING PATH IS ESTABLISHED.**

**DANGER**

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

It is possible that the item you chose as a ground reference is not really a good ground reference. You should look for alternate ground references if you doubt the quality of your ground reference. If you cannot find a ground reference that you have confidence in, perform steps 1 and 2 in section "When no Good Ground Reference is Available".

**When no Good Ground Reference is Available: DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Make sure that the branch circuit breaker in the customer's power distribution panel is set to ON.

**1. Verifying that the Ground Contact Connects to Ground:**

Verify that the voltage between the grounding contact in the receptacle and at least one of the other contacts in the receptacle is higher than 50VAC.

Low voltage here means that the grounding contact in the receptacle is not connected well enough to the building ground to provide its safety function.

**Note:** This test does not assure that your grounding contact connects to ground through a very good path. It does assure that the grounding contact in the receptacle makes some contact.

**Attention: DO NOT USE THIS RECEPTACLE UNTIL THE CUSTOMER HAS CORRECTED THE GROUNDING PROBLEM.**

**DANGER**

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)

2. **Verifying that the Grounding Contact is not Connected to Hazardous Voltage:**

a. **Single Phase**

Using a voltmeter, measure the voltage from the grounding contact to each of other contacts. Verify that these voltages are no more than 10VAC higher than the voltage between the two non-grounding contacts measured.

**Note:** You checked that the proper voltage exists between the non-grounding contacts in section "Verifying that Correct Voltage Exists Between Power Contacts" on page 155.

- For Single Phase, it was checked in step2.
- For Three Phase, it was checked in step3.

b.

**Three Phase**

Measure the voltage from the grounding contact to the NEUTRAL contact. Verify that it is no more than 10VAC. (See step 3c on page 155 in section Verifying that Correct Voltage Exists Between Power Contacts to determine which is the NEUTRAL contact.)

Too high a voltage measured in either steps 2a or 2a suggests that the grounding contact is improperly connected to a current-carrying part of the building wiring somewhere in the customer's installation.

**Attention: DO NOT USE THIS RECEPTACLE UNTIL THE CUSTOMER CORRECTS THE PROBLEM .**

**DANGER**

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)

*Return to the printed instructions or to the page that sent you here.*

## A034: How to verify that your system has the system number specified

The set of installation instructions was printed for a specific system. To verify that you have the correct system for the instructions, do the following:

1. Find the System Content List.
  - This list is fastened to the outside of the shipping material or to the front of the system unit (SU).
  - If you cannot find this list, ask the customer for it.
2. Find the **system number** on the System Content List. (Ignore other numbers on the list at this time.)

If any frame does not have this system number on the System Content List, you cannot continue with this installation. Inform your sales representative.

If the system numbers all match, you can continue with this installation.

*Return to the printed instructions or to the page that sent you here.*

## A036: How to Verify Customer Preparation

### For initial installation

Verify with the customer that the following items are available. You will need them to complete this installation.

1. A floor plan that shows where to place each frame.
2. A console that includes cables and a power source.
3. A modem for the electronic customer support function (if the customer ordered this function). This includes the correct telephone jack, cables, and a power source.

Ask the customer if the IBMLink Welcome Packet is available. You can complete the installation without this packet, if necessary.

### For an upgrade

Before starting an upgrade, check with the customer about the following items.

- Ensure that the latest PTFs have been installed and correct level of Operating System/400 to support the new hardware additions.
- To add one or more supported frames:
  - You need a floor plan so you know where to place the frames.
  - You must have an electrical outlet of the correct type for each frame.
- If you are performing *any* model change, the customer should have performed a system save operation. (Procedures for the customer to use when performing a system save operation are in the *Backup and Recovery*, SC41-5304-04.)
  - Verify that the OS/400 licensed program was at the correct level for this upgrade before the system save occurred.
- In addition, if the model change you are performing is 9404 Model Bxx-Fxx, 9406 Model Dxx-Fxx, Model 3xx hardware to Model 6xx, 7xx, or SB1 hardware change, ensure that you do the following **before starting** the upgrade:
  - Clean up the error log or product activity log (it will get reset during the upgrade). If you are tracking intermittent problems, print out the error log or product activity log to save those entries. Follow the Intermittent Problem procedure in the manual *9404/9406 Models 5xx Problem Analysis and Repair and Parts*, SY44-5951-01 for Model 5xx or *9404/9406 Models 3xx Repair and Parts*, SY44-3952.
  - Verify that all disk units on the system are working correctly. Ask the customer for a current printout of the Disk Configuration Status. Use the *Backup and Recovery*, SC41-5304-04.
  - If the system uses mirrored protection, the customer should have a current printout giving the level of mirrored protection. Verify that all configured disk units show a status of RESUMING or ACTIVE.
  - If device parity sets are to be moved, ensure that parity sets are not in exposed mode.
- Before starting an upgrade for *any* model change:

- Verify that the SAVSYS tape media is compatible with the alternate IPL device.

**Note:** There are no FULIC tapes for 940x Models 6xx, 7xx, or SB1

- Verify that the customer has a current printout of the hardware resources on the system. (This can be obtained using the Display Hardware Resources command.)
- Before actually starting the physical changes, verify that the customer is prepared for the system to not be available for the amount of time shown on the printed instructions. Some upgrades may take eight hours or more. SEE “A815: Estimated Installation and Model Conversion Times for 6xx and Sxx” on page 43.

*Return to the printed instructions or to the page that sent you here.*

## **A240: How to verify that initial program load (IPL) is complete after a system hardware installation or hardware upgrade**

You may encounter the following displays during the system IPL. Entering the required information when prompted will allow the system to complete the IPL. Detailed information for each display is available by pressing the Help key.

1. Did the Change System Serial Number display appear?

**Yes      No**

↓      Continue with step 7.

2. The system was unable to determine the system serial number.
  - a. Find the system serial number on the label of the system control panel.
  - b. Enter the system serial number.
  - c. Press the Enter Key.

3. Did the Change System Type display appear?

**Yes      No**

↓      Go to step 7.

4. The system was unable to determine the system type.
  - a. Find the system type on the label of the system control panel.
  - b. Select the system type.

- 5.

**Note:** You must select the current system type that is found on the system label.

6. Press the Enter Key.

7. Did the Verification of System Password Failed display appear?

**Yes      No**

↓      Continue with step 11 on page 161.

8. The system password is not installed on your system.
  - a. Select option 2, Bypass the system password.
  - b. Press the Enter key.
9. On the Bypass the System Password display, press F9 (Bypass).

**Note:** The Verification of System Password display appears, indicating an incorrect password. After the Bypass mode expires, the system will not complete the next IPL until you enter the correct System Password.

A System Password must be ordered in the event that a new password is required.

- For USA:
  - Submit the Password order using an AEFORM. The name of the AEFORM is "AS400SPW". Access this AEFORM from OV/VM or by business partners on IBMLINK by using the AEFORM facility.
- For EMEA/AP/CAN/LA:
  - Submit the system password request to your country focal point.

The following RPQs give detailed information regarding specific system password ordering requirements :

- S40345 (US/LA/AP/Canada)
- S40346 (EMEA)

The marketing team is responsible to deliver the new System password to the customer.

10. The Bypass Period has Ended display will appear after the Bypass Period has expired. Review the information that is presented on this display to determine action you should take.

The IPL will continue.

11. When IPL is complete, the Sign On display appears on the console. If this does not occur in a reasonable time interval, go to the Problem Analysis and Repair and Parts service manual for your system to isolate the problem.

*Return to the printed instructions or to the page that sent you here.*

## A242: How to verify that the system recognizes hardware changes

1. If the IPL or Install the System display is present:
  - a. Select the Use Dedicated Service Tools (DST) option.
  - b. Press the Enter key.
  - c. Continue with step 3.
2. If the Install the Operating System display is present:
  - a. Select the Work with Dedicated Service Tools (DST) option.
  - b. Press the Enter Key.
  - c. Continue with step 3.
3. Type the DST password on the Dedicated Service Tools (DST) Sign On display.
4. Press the Enter key.
5. Select the Start a service tool option on the Use Dedicated Service Tools (DST) display.
6. Press the Enter key.
7. Select the Hardware Service Manager option on the Start a Service Tool display.
8. Press the Enter key.
9. Select the System Bus Resource option on the Logical Hardware Resource display.

10. Press the Enter key.
11. Select the System bus resources option on the Logical Hardware Resources display.
12. Press the Enter key.
13. Verify that each IOP card and IOA card that is physically installed in the system is recognized by the system. Check that each card is listed at the correct address on the Display Hardware on I/O Bus display. The status of each card must be Operational.  
 For information about the I/O addressing scheme for service processor card, the I/O processor and adapter cards, and the I/O devices refer to the "I/O Bus Addressing Schemes" section in the *Problem Analysis and Repair and Parts* service manual for your system. The system uses these addresses in configuration and error logging (product activity logging). The direct select address and unit address are displayed on the system configuration list, in error log utility reports (or product activity logs, refer to the *AS/400 Service Functions*, SY44-5902-03 for more information). For some SRCs, the direct select address and unit address are displayed on the control panel.
14. If the system recognizes all IOP cards and IOA cards correctly, press F12 (Exit) and continue with step 19.  
 If the system does not recognize an IOP card or an IOA card correctly, type a 5 by the failing card, press the Enter key, and continue with step 27 .
15. Select the Processor resource on the Logical Hardware Resources display.
16. Press the Enter key.
17. Verify that each processor card that is physically installed in the system is recognized by the system and listed on the Display Processor Information display.
18. If the system recognizes all processor cards correctly, press F12 (Exit) and continue with step 23.  
 If the system does not recognize a processor card correctly, continue with step 27.
19. Select the Main storage resource option on the Logical Hardware Resources display.
20. Press the Enter key.
21. Verify that each main storage card that is physically installed in the system is recognized by the system and listed on the Display Main Storage Information display. The status of each card must be Operational.
22. If the system recognizes all main storage cards correctly, press F3 (Exit) and continue with step 15.  
 If the system does not recognize a main storage card correctly, continue with step 27.
23. Select the Failed and non-reporting hardware resource option on the Logical Hardware Resources display.
24. Press the Enter key.
25. If there is no failed or missing hardware, press F3 (Exit) twice.
26. **Return to the printed instructions or to the page that sent you here.**
27. Do the following:
  - a. Write down information from the display about the failure.
  - b. Press F12 (Cancel) as needed to get back to the Use Dedicated Service Tools (DST) display.
  - c. Select the Start a service tool option.

- d. Press the Enter key.
- e. Select the Power off the system option, on the Start a Service Tool display.
- f. Press the Enter key.
- g. Press F10 (Power off) on the Confirm System Power Off display.
- h. When power-off is complete, determine what the problem is and correct it. Use the information you wrote down about the failure. Carefully review all the tasks in your printed instructions. You may also need to use the manual *AS/400 Service Functions*, SY44-5902-03.
- i. Switch on system power by pressing the Power switch up on the system control panel.
- j. Return to step 1 on page 161.

*Return to the printed instructions or to the page that sent you here.*

## A255: How to perform the Upgrade Load Source Utility function

**Note:** This function will not work with any disk units removed from the system during this upgrade.

1. On the IPL or Install the System display:
  - a. Select the Use Dedicated Service Tools (DST) option.
  - b. Press the Enter key.
2. On the Use Dedicated Service Tools (DST) display:
  - a. Select the Work with disk units option.
  - b. Press the Enter key.
3. On the Work with Disk Units display:
  - a. Select the Work with disk unit recovery option.
  - b. Press the Enter key.
4. On the Work with Disk Unit Recovery display:
  - a. Select the Upgrade load source utility option.
  - b. Press the Enter key.
5. Did the Upgrade Load Source Utility Failed display appear?
 

<b>Yes</b>	<b>No</b>
↓	
	Continue with step 7.
6. Follow the instructions on the displays until you get back to the Work with Disk Unit Recovery display. When you get there, repeat step 4.
7. Verify the data on the Confirm Upgrade Load Source Utility display with the customer. (The following is an example.)
  - The disk unit that was unit 1 before the upgrade should now have the first available unit number.
  - All other disk units should have the same unit number as before.
8. Follow instructions on the display until the DST main menu appears.

*Return to the printed instructions or to the page that sent you here.*

## A812: Error Handling Procedures for Replacing the Release Upgrade

1. Did a screen appear indicating that the disk configuration has changed and did it prompt if you would like to accept the new configuration?

**No      Yes**

↓      Select (F3) to NOT accept the changed disk configuration. DO NOT select option (F10) to accept the new configuration

Go to step 2.

2. Signon to DST
3. Select start service function
4. Select Hardware Service Manager
5. Verify all hardware is properly reporting
6. Exit Hardware Service Manager (F12)
7. Select work with disk units
8. Select work with disk unit recovery
9. Select Upgrade Load Source utility option

*Return to the printed instructions or to the page that sent you here.*

## A920: How to check the revision level of the Licensed Internal Code in a 9348 tape unit

Get agreement from the customer before doing this procedure. The 9348 will not be available to the customer while you are doing this test.

Do the following on the front panel of the tape unit:

1. If the online light is lighted, press the online pushbutton to take the tape unit offline.
2. Press the diagnostic mode pushbutton.
3. Press the diagnostic select switch until **INFO\*** appears in the status display.
4. Press the Enter pushbutton.
5. Press the diagnostic select switch until **INFO 25** appears in the status display.
6. Press the Enter pushbutton and observe the status display. The following sequence of numbers is shown repeatedly:

8 www, 3 xxx, 4 yyy, 16 zzz.

where www, xxx, yyy, and zzz are three digit numbers, indicating the revision level of the Licensed Internal Code in different field replaceable units (FRUs) in the tape unit.

Are xxx, yyy, and zzz each more than 674?

**No      Yes**

↓      The revision level of the code is acceptable.

1. Press the Cancel pushbutton twice to return the tape unit to normal operation.
2. *Return to the printed instructions or to the page that sent you here.*

The Licensed Internal Code should be changed. Do the following:

1. Order 9348 ECA003 (Synchronous Bus). When installed, this will improve the performance of the 9348 on the upgraded system.
2. Explain to the customer that:
  - The 9348 will continue to work as before. It will have better performance after the Licensed Internal Code is changed (there is no charge for this).
  - Until you receive and install the new Licensed Internal Code in the 9348, **CPP6060** will be seen on the System Operator Message Queue and an Informational SRC of **9348FFF8** will show up in the error log (product activity log).
  - No customer action is necessary.

*Return to the printed instructions or to the page that sent you here.*



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## Chapter 3. Relocating a System

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### Relocating a System

Safety information is given in the front of this manual. Ensure that you understand all that needs to be done to ensure safety. If your country translates safety messages, see the manual, *Safety Information*, SA41-5139-02, shipped with the system.

Read and follow all steps carefully. See “Appendix D. Index of HELP Sections” on page 367 as needed when performing these steps.

#### Note:

**Frame:** It is a term used throughout this HELP and it is defined as a tower or rack.

---

### Prepare for the relocation

1. Verify the system to be relocated.
2. Ensure that packing kits are available for the system unit frame, non-system unit frames, and system attached devices.
3. Print the system configuration list. Save this printout. It will be used when the system is relocated.

---

### Remove power

1. Power off the system from the console.
2. Power off all workstations, modems, and devices.
3. Remove all ac power cables from wall outlets.
4. Remove power cables from all workstations and modems.
5. Remove power sequence cables from all system frames (system units, system expansion unit, bus extension units), and device frames.

---

### Remove device cables and prepare devices for shipping

1. Disconnect the console signal cable and prepare the console for shipping.
2. Prepare devices in the frames. See the specific device manuals
  - Install device shipping clamps
  - Lock device shock protection
3. Remove cable ties in the frames.
4. Remove all communications cables. Label each cable. Write the same label information on the copy of the system configuration list.

5. Remove all workstation attachment boxes.
6. Remove all frame to frame cables.
7. Label each cable. Write the same label information on the copy of the system configuration list.
8. Coil and tie the cables.

---

## Prepare the frame for shipment

**Note:** Items may not be applicable to Advanced Series frames.

1. Set CB1 and CP7 off at the back of the frame (for racks)
2. Remove acoustic panels (for racks)
3. Remove the stabilizer (for racks)
4. Unlock the casters.

---

## Pack the parts for removal

1. Pack all system reference material together.
2. Pack all cables and parts from the system together.

You have completed removing the frame hardware.

---

## Installing a System after Relocation

Safety information is given in the front of this manual. Ensure that you understand all that needs to be done to ensure safety. If your country translates safety messages, see the manual, *Safety Information*, SA41-5139-02, shipped with the system.

Read and follow all steps carefully. See “Appendix D. Index of HELP Sections” on page 367 as needed when performing these steps.

---

## Prepare to Install the System

Before starting the installation, do the following:

1. Perform all the steps given in Help A033.
2. The measured voltage affects device voltage settings. See the specific device manuals and verify the voltage settings.
3. Position the system unit frames and non-system unit frames.
4. Install all the frames.

**DO NOT PLUG IN ANY POWER CABLES**

**CAUTION:**

**These instructions describe how to install a rack stabilizer to the bottom front of each rack to prevent the rack from falling over when you slide or pull out the system units. Do not attempt to slide out or install any system units until the stabilizer is correctly installed. Use caution when moving the rack and its system units. (RSFTC063)**

---

## Prepare devices in the frames

**Note:** Items may not be applicable to Advanced Series frames.

1. Remove shipping brackets and clamps, and prepare all devices in the frame for operation.
2. Verify that all power cable connections are complete and circuit breakers of devices are set.

---

## Install cables and console

Use the system configuration list to perform the following:

1. **DANGER**

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

Connect the workstation attachments.

2. Install the primary console.

**DO NOT PLUG IN POWER**

- The cable from the primary console must be connected to port 0 on the workstation attachment that is connected to the first workstation IOP on bus 0 on model 3xx or on bus 1 on model 5xx.
- The address of the primary console must be set to 0.
- The workstation IOP could be:
  - MFIOF
  - A 6050 card (for Twinax) or a 6141 card (for ASCII).
  - A 6054 adapter card. This card could be in position A or B of a 2623 card or MFIOF.

3. **DANGER**

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

Install the electronic customer support modem and cable.

**DO NOT PLUG IN POWER**

4. Connect the frame to frame, IPI-3 and SCSI signal cables. Use the system configuration list.

---

## Install power cables and set switches

**Note:** Items may not be applicable to Advanced Series frames.

1. Install the power sequence cables. Use the system configuration list.
2. Install the power cables in frames.
3. Set the Emergency Power Off switch to the On (I) position.  
System ac power has not been connected.**DO NOT CONNECT AC POWER UNTIL INSTRUCTED.**
4. Set the power switch on each device to the On (I) position.

---

## Prepare the system and connect AC power

**Note:** Items may not be applicable to Advanced Series frames.

1. Ensure CB1 and CP7 are off for each rack.

2. If the customer-supplied power outlets all checked out (or have been corrected), connect customer ac power to the frame.
3. Set the keylock switch to the Manual position.
4. Set CB1 and CP7 in each rack to the on position.
5. Plug in the console power.
6. **DANGER**

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

Plug in the modem power.

7. Switch on power for the console. See the console manual.
8. Switch on power for the system from the system unit control panel.
9. Verify power on all devices.
10. Verify device operation.
11. Perform IPL on the system. Get to the sign-on display on the console. If not, go to the checklist at the end of this chapter.
12. Perform the electronic customer support function test.

---

## Install remaining devices and cables

1. Install cable ties.
2. **DANGER**

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

Attach any remaining workstation attachment devices. Use the system configuration list.

3. **DANGER**

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

Attach any remaining communications cables. Use the system configuration list.

Installation of frame hardware is complete.

---

## Checklist if problems occur

**Note:** Items may not be applicable to Advanced Series frames.

### Power on checklist

1. EPO switch is on.
2. Rack power cable installed.
3. J10 terminating plug installed (For Non-SPCN rack frames)
4. CP1 - CP6 set correctly.
5. AC voltage is correct.

If any failures occur, see the manual service manual for your system.

### **IPL problem checklist**

1. Check signal cables.
2. Check signal cable terminating plugs.
3. Verify device addresses.
4. Verify console has power.
5. Verify IPI-3 cable network.

If any failures occur, see the manual service manual for your system.



## Appendix A. Model 170, 250, 6xx/Sxx, 7xx Cables

Table 7. AS/400 Advanced Series Systems Cable Information (BCABL1)

CIN	P/N	Description	Card Type(s)
0325		Integrated Netfinity Server Cablefor NT	6617, 2854
0328		Operations Cable	
0329		EIA 232/V.24 24m (80ft)	2699
0330	1. 21H3764 2. 21H3765 3. 21H3766	1. EIA 232/V.24 6.1M (20FT) - SPD 2. Germany 3. Japan	2699
0331	1. 21H3767 2. 21H3768 3. 21H3769	1. EIA 232/V.24 15.2M (50FT) - SPD 2. Germany 3. Japan	2699
0332	1. 21H3770 2. 21H3771 3. 21H3772	1. EIA 232/V.24 15.2M (50FT) - SPD 2. Germany 3. Japan	2699
0333	1. 21H3773 2. 21H3774 3. 21H3775	1. EIA 232/V.24 6.1M (20FT) - SPD 2. Germany 3. Japan	2699
0334	1. 21H3776 2. 21H3777 3. 21H3778	1. EIA 232/V.24 24.8M (80FT) - SPD 2. Germany 3. Japan	2699
0335	21H3787	V.36 6.1M (20FT) - SPD	2699
0336	21H3788	V.36 15.2M (50FT) - SPD	2699
0337	21H3789	V.36 45.7M (150FT) - SPD	2699
0338	21H3792	V.35 6.1M (20FT) - SPD	2699
0339	21H3785	V.35 15.2M (50FT) - SPD	2699
0340	21H3786	V.35 24.4M (80FT) - SPD	2699
0341	21H3782	X.21 6.1M (20FT) - SPD	2699
0342	21H3783	X.21 15.2M (50FT) - SPD	2699
0344	21H3779	Client Access Console cable 6M	9699
0346	21H7377	RIO Cable, 15M (32.8FT), used with RIO Clock Cards for RIO Bus	Model 640/650 S30/S40 System Unit
0347	21H7643	RIO Cable, 6M (19.7FT), 2 Required for Models 65x/S4x	FC 9251
0348	1. 44H7480 2. 44H7482 3. 44H7484	1. EIA 232/V.24 6.1M (20FT) - PCI 2. Germany 3. Japan	2721
0349	1. 44H7481 2. 44H7483 3. 44H7485	1. EIA 232/V.24 15.2M (50FT) - PCI 2. Germany 3. Japan	2721

Table 7. AS/400 Advanced Series Systems Cable Information (BCABL1) (continued)

CIN	P/N	Description	Card Type(s)
0350	1. 44H7486 2. 44H7489 3. 44H7492	1. EIA 232/V.24 ENH 6.1M (20FT) - PCI 2. Germany 3. Japan	2721
0351	1. 44H7487 2. 44H7490 3. 44H7493	1. EIA 232/V.24 ENH 15.2M (50FT) - PCI 2. Germany 3. Japan	2721
0352	1. 44H7488 2. 44H7491 3. 44H7494	EIA 232/V.24 ENH 24.4M (80FT) - PCI	2721
0353	44H7495	V.35 6.1M (20FT) - PCI	2721
0354	44H7496	V.35 15.2M (50FT) - PCI	2721
0355	44H7497	V.35 24.4M (80FT) - PCI	2721
0356	44H7498	V.36 6.1M (20FT) - PCI	2721
0357	44H7499	V.36 15.2M (50FT) - PCI	2721
0358	44H7500	V.36 45.7M (150FT) - PCI	2721
0359	44H7501	X.21 6.1M (20FT) - PCI	2721
0360	44H7502	X.21 15.2M (50FT) - PCI	2721
0362	44H7504	Client Access Console cable 6M - PCI	6A59
0365			
0367		Operations Cable - PCI	2721
5112	62G1019	3490-Exx SCSI cable 12M	6501
5118	62G1020	3490-Exx SCSI cable 18M	6501
5125	62G1021	3490-Exx SCSI cable 25M	6501
5128	62G1017	3490-Exx SCSI cable 2.8M	6501
5145	62G1018	3490-Exx SCSI cable 4.5M	6501
9020	72X5641	V.35 6.1M (20FT)  In Germany on 236/4xx models, also use CISPR-B cable 44H4315 on 2613	2613 6153
9021	72X5640	X.21 6.1M (20FT)  In Germany, on 236/4xx models also use CISPR-B cable: – 44H4313 on 2610 – 44H4315 on 2614	2610 2614

Table 7. AS/400 Advanced Series Systems Cable Information (BCABL1) (continued)

CIN	P/N	Description	Card Type(s)
9022	1. 22F0149 2. 22F0150 3. 22F0151	1. EIA 232/V.24 6.1M (20FT) 2. In Germany, on 236/4xx models also use CISPR-B cable: • 44H4313 on 2609 • 44H4315 on 2612 3. Japan	2609 2612
9023	1. 22F0152 2. 22F0153 3. 22F0154	1. EIA 232/V.24 Enhanced 6.1M (20FT) 2. In Germany, on 236/4xx models also use CISPR-B cable: • 44H4313 on 2609 • 44H4315 on 2612 3. Japan	2609 2612
9024	6339098	Token Ring cable 2.44M	6510 6520 2619 2626
9025	86G7691	Ethernet cable 3M**	6510 6520
9026	46G0450	Client Access console cable 6M  In Germany on 4xx models also use CISPR-B cable 44H4315	2612
9027	46G0479	Client Access console cable 2.45M  In Germany on 4xx models also use CISPR-B cable 44H4315	2612
9080			
9082			
9083			
9180			
9182			
9183			
9213	21F9358	SPCN cable 15M (49.2FT)	Rack Tower
9214	21F9359	SPCN cable 30M (98.4FT)	Rack Tower
9215	21F9360	SPCN cable 60M (196.8FT)	Rack Tower
9216	21F9362	SPCN internal rack cable .6M (1.96FT)	Rack
9219	21F9469	SPCN cable 6M (19.7FT)	Rack Tower
9220	17G2017	SPCN internal cable 1.2M (3.9FT)	9337
	21F9364	SPCN shorting plug	Rack Tower

Table 7. AS/400 Advanced Series Systems Cable Information (BCABL1) (continued)

CIN	P/N	Description	Card Type(s)
9522	86G6236	TELCO USA/CAN  The cable shipped with the 2664 IOP may vary depending on the country.  In Germany on 4xx models also use CISPR-B cable 44H4315	2664
9801	6495253	DCFI cable .6M (2FT)	6112
9802	6495254	DCFI cable 1.5M (5FT)	6112
9803	6495250	DCFI cable 2.5M (8.2FT)	6112
9804	6495252	DCFI cable 4M (13.1FT)	6112
9805	6495251	DCFI cable 6M (19.7FT)	6112
9806	6495255	DCFI cable 10M (32.8FT)	6112
9807	6495256	DCFI cable 20M (65.6FT)	6112
9808	6495257	DCFI cable 30M (98.4FT)	6112
9809	6495258	DCFI cable 40M (131.2FT)	6112
9810	6495264	DCFI cable 60M (196.8FT)	6112
9814	92G5195	Antenna cable 20FT  In Germany, on 4xx models also use cable 44H4326 between the IOP and the RS-485 cable	2668
9815	92G5196	Antenna cable 50FT  In Germany, on 4xx models also use cable 44H4326 between the IOP and the RS-485 cable	2668
9817	21H7375	JTAG Cable, 3M (9.8FT), CEC to Base I/O Tower, Models 65x/S4x only.	FC 9251
9818	21H7374	OP Control Panel Cable, 5M (16.4FT), CEC to Base I/O Tower, Models 65x/S4x only.	FC 9251
9819	21H7695	BBU Cable, 14.5M (47.6 FT)	FC 5150
9825	59X3829	ASCII 12 port 6.1M (20FT)  Models 2xx/4xx use P/N 59X3816	6141 2637
9826	6495268	SCSI 4M (13.1FT)	2621
9827	6495269	SCSI cable 12M (39.3FT)	2621
9835	1. 21F9350 2. 21F9352 3. 21F9351	1. V.24 Enhanced 15.2M (50FT) 2. In Germany on 4xx models, also use CISPR-B cable:  44H4313 on 2609  44H4315 on 2612 3. Japan	2609 2612

Table 7. AS/400 Advanced Series Systems Cable Information (BCABL1) (continued)

CIN	P/N	Description	Card Type(s)
9836	1. 21F9348 2. 21F9353 3. 21F9349	1. RS-232 15.2M (50FT) 2. In Germany on 4xx models, also use CISPR-B cable: 44H4313 on 2609 44H4315 on 2612 3. Japan	2609 2612
9838	21F9357	V.35 15.2M (50FT)  In Germany on 4xx models, also use CISPR-B cable 44H4315 on 2613	2613 6153
9839	21F9356	X.21 15.2M (50FT)  In Germany on 4xx models, also use CISPR-B cable: 44H4313 on 2610 44H4315 on 2614	2610 2614
9840	72X5643	RS-366 6.1M	Autocall
9841	21F5097	ASCII 6 Port 6.1M (20FT)	6141 2637
9842	21F5093	8 port Twinax 6.1M (20FT)	6140 6050 9149
9843	21F9345	2 Port comm cable 3M (9.8FT)  In Germany on 236/4xx models, also use CISPR-B cable 44H4313	2609 2610
9844	74F1663 17G2528 8191922 8191781	ISDN cable 7M (22.9FT)  France  Euro NIA  Switzerland	2605
none	56F0307	ISDN Wrap Assembly	2605
9845	46G2747	Localtalk cable	6054 9173
9848	85F8109	Data Encryption cable 6.1M (20FT)	2620 2628
9851	46F2440	Optical bus cable 6M - System Unit Expansion	5062 or 5042
9852	46F2441	Optical bus cable 10M - System Unit Expansion	5062 or 5042
9853	46F2442	Optical bus cable 20M - System Unit Expansion	5062 or 5042
9854	46F2443	Optical bus cable 60M - System Unit Expansion	5062 or 5042

Table 7. AS/400 Advanced Series Systems Cable Information (BCABL1) (continued)

CIN	P/N	Description	Card Type(s)
9855	46F2444	Optical bus cable 100M - System Unit Expansion	5062 or 5042
none	72X6348	Bus cable 3M - System Unit Expansion	5063
9870	21F9043	SCSI 2M (6.6FT)	6500
9871	21F9044	SCSI 4M (13.1FT)	6500
9872	56F0382	SCSI 6M (19.7FT)	6500
9873	21F9045	SCSI 24M (78.7FT)	6500
9875	17G2007	SCSI 2M (6.6FT)	6501
9876	21F9047	SCSI 4M (13.1FT)	6501
9877	56F0381	SCSI 6M (19.7FT)	6501
9878	21F9048	SCSI 24M (78.7FT)	6501
9879	17G3991	V.35 6.1M (20FT)	2666
9880	17G3992	V.35 24.4M (80FT)	2666
9882	17G4000	RS449 6.1M (20FT)	2666
9883	17G4001	RS449 24.4M (80FT)	2666
9884	17G4002	RS449 45.7M (150FT)	2666
9885	17G3987	X.21 6.1M (20FT)	2666
9886	46G3658	9331 Diskette Drive	6146
9886	46G3658	connects 9331 diskette drive only (no WSC pass thru)	6147
9887	46G3585	connects 9331 and twinax WSC - (Y cable)	6147
9888	17G4138	Integrated FAX Wrap Plug	2664
9889		Yagi Directional Antenna	2668
9890		Omni-Directional Antenna	2668
9891		Hemispherical Antenna	2668
9892		Directional Antenna	2668
9893	16G5707	Optical Bus Cable 6M	2686 2688
9894	16G5708	Optical Bus Cable 10M	2686 2688
9895	16G5709	Optical Bus Cable 20M	2686 2688
9927	6473026	3490-CXX Channel Box and cable	2644
9928	6473011	1.7 meter 3490-CXX attachment	2644
9929	6473014	6.6 meter 3490-CXX attachment	2644
9930	6473016	24.0 meter 3490-CXX attachment	2644
9980	6473029	3490 Serpentine Connection	2644
9984	62X3427	Bus Extension 4M	5060
9985	62X3428	Bus Extension 8M	5060
--	4236482	Std. Workstation device cable	Twinax device
--	46F5894	110V Watertight power cord 14'	system
--	73F4932	220V Watertight power cord 14'	system
--	86G7874	110V 15A Locking power cord 6'	system

Table 7. AS/400 Advanced Series Systems Cable Information (BCABL1) (continued)

CIN	P/N	Description	Card Type(s)
--	86G7878	220V 10A Locking power cord 6'	system
--	86G7879	220V 10A Locking power cord 14'	system
--	87G3881	110V 15A Locking power cord 14'	system
—	21H7691	250V 16A IEC309 power cord 14'	6xx/Sxx system
—	21H7693	250V 32A IEC309 power cord 14'	6xx/Sxx system
—	11F0113	250V 30A TLOCK power cord 14' - USA	6xx/Sxx system
—	11F0114	250V 30A TLOCK power cord 6' - USA	6xx/Sxx system
—	11F0115	250V 30A TLOCK power cord 14' - USA	6xx/Sxx system
—	11F0106	250V 30A Australia power cord 14'	6xx/Sxx system
—	11F0107	250V 30A New Zealand power cord 14'	6xx/Sxx system
—	46F4594	250V 30A Watertight power cord 14'	6xx/Sxx system
—	46F4593	250V 30A Watertight power cord 6'	6xx/Sxx system
—	46F6063	250V 30A Hardwire power cord 14'	6xx/Sxx system



## Appendix B. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
	0004	V4R1	64Mb Base Main Storage Specified
	0031	-	Low speed modem
	0032	-	High speed modem
	0033	-	IGN/400
	0040	-	Disk Level Mirroring Specify Code
	0042	-	IOP Level Mirroring Specify Code
	0043	-	Bus Level Mirroring Specify Code
	0044	-	Device Parity Protection Specify Code
	0046	-	OptiConnected System specify code
	0059	-	Transition data link
	0090	-	5052 Located on System Unit
	0095	-	Local source tape with SPD controller
	0096	-	Local source tape with PCI controller
	0200	-	Replace the Release Specify Code
	0201	-	Unload / Reload Install Specify Code
	0202	-	Staged Upgrade Offering
	0203	-	Side by Side Install
	0204	-	Staged Side by Side Install
	0210	-	RISC memory Return Specify
	0220	-	Token-ring on Integrated Netfinity Server
	0221	-	Ethernet on Integrated Netfinity Server
	0222	-	100/10 Ethernet on Integrated Netfinity Serv
	0325	-	Integrated Netfinity Server extension cable forT
	0330	-	V.24/EIA232 20 foot cable
	0331	-	V.24/EIA232 50 foot cable
	0332	-	V.24/EIA232 20 foot enhanced cable
	0333	-	V.24/EIA232 50 foot enhanced cable
	0334	-	V.24/EIA232 80 foot enhanced cable
	0335	-	V.36/EIA449 20 foot cable
	0336	-	V.36/EIA449 50 foot cable
	0337	-	V.36/EIA449 150 foot cable
	0338	-	V.35 20 foot cable
	0339	-	V.35 50 foot cable

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
	0340	-	V.35 80 foot cable
	0341	-	X.21 20 foot cable
	0342	-	X.21 50 foot cable
	0348	-	V.24/EIA232 20 foot cable - PCI
	0349	-	V.24/EIA232 50 foot cable - PCI
	0350	-	V.24/EIA232 20 foot enhanced cable - PCI
	0351	-	V.24/EIA232 50 foot enhanced cable - PCI
	0352	-	V.24/EIA232 80 foot enhanced cable - PCI
	0353	-	V.35 20 foot cable - PCI
	0354	-	V.35 50 foot cable - PCI
	0355	-	V.35 80 foot cable - PCI
	0356	-	V.36 20 foot cable - PCI
	0357	-	V.36 50 foot cable - PCI
	0358	-	V.36 150 foot cable - PCI
	0359	-	X.21 20 foot cable - PCI
	0360	-	X.21 50 foot cable - PCI
	0362	-	Comm. Console 20 foot cable - PCI
	0365	-	V.24/EIA232 80 foot cable - PCI
0367	9721	V4R3	Operations Console cable - PCI
0380	9699	V4R3	Remote Control Panel cable - SPD
	1312	V4R1	1.03GB F-1 Disk Unit Kit
	1313	V4R1	1.96GB F-1 Disk Unit Kit
	1322	V4R1	1.03GB F-2 Disk Unit Kit
	1323	V4R1	1.96GB F-2 Disk Unit Kit
	1325	V4R1	1.03GB F-2 Disk Unit Kit
	1326	V4R1	1.96GB F-2 Disk Unit Kit
	1327	V4R1	4.19GB F-2 Disk Unit Kit
	1333	V4R1	8.58GB U-2 Disk Unit Kit
	1334	V4R2	17.54GB U-2 Disk Unit Kit
	1336	V4R1	1.96GB U-2 Disk Unit Kit
	1337	V4R1	4.19GB U-2 Disk Unit Kit
	1349	V4R1	1.2GB F-1 1/4 inch Cartridge Tape Kit
	1350	V4R1	2.5GB F-1 1/4 inch Cartridge Tape Kit
	1355	V4R1	13.0GB F-2 1/4 inch Cartridge Tape Kit
	1360	V4R1	7.0GB F-1 8mm Cartridge Tape Kit
	1379	V4R1	1.2GB F-1 1/4 inch Cartridge Tape Kit
	1380	V4R1	2.5GB F-1 1/4 inch Cartridge Tape Kit
	1402	-	120V 15A 9 foot Line Cord
	1403	-	240V 10A 9 foot Line Cord

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
	1495	V4R3M0	Interactive Capacity Specify
	1496	V4R3M0	Interactive Capacity Specify
	1500-1505	V4R3M0	Interactive Card>
	1506-1514	V4R3M0	Interactive Card>
	1602	V4R1	1.03GB F-1 Disk Unit Kit
	1603	V4R1	1.96GB F-2 Disk Unit Kit
	1700	V4R2	Integrated Netfinity Server Keyboard and Mouse for NT
2040	2040	V3R0M5	Processor Card / Model 300
2041	2041	V3R0M5	Processor Card / Model 300
2042	2042	V3R0M5	Processor Card / Model 300
2043	2043	V3R0M5	Processor Card / Model 310
2044	2044	V3R0M5	Processor Card / Model 310
2050	2050	V3R0M5	Processor Card / Model 320
2051	2051	V3R0M5	Processor Card / Model 320
2052	2052	V3R0M5	Processor Card / Model 320
2061	2061	V4R3M0	Processor - Model 720
2062	2062	V4R3M0	Processor - Model 720
2063	2063	V4R3M0	Processor - Model 720
2064	2064	V4R3M0	Processor-Model 720
2065	2065	V4R3M0	Processor-Model 730
2066	2066	V4R3M0	Processor-Model 730
2067	2067	V4R3M0	Processor-Model 730
2068	2068	V4R3M0	Processor-Model 730
2069	2069	V4R3M0	Processor-Model 740
2070	2070	V4R3M0	Processor-Model 740
2118	2118	V4R1M0	Processor - Model S10
2119	2119	V4R1M0	Processor - Model S10
2120	2120	V3R6M0	Processor Card / Model 50S
2121	2121	V3R6M0	Processor Card / Model 50S
2129	2129	V4R1M0	Processor - Model 600
2134	2134	V4R1M0	Processor - Model 600
2135	2135	V4R1M0	Processor - Model 600
2136	2136	V4R1M0	Processor - Model 600
2140	2140	V3R6M0	Processor - Model 500
2141	2141	V3R6M0	Processor - Model 500
2142	2142	V3R6M0	Processor - Model 500
2143	2143	V3R6M0	Processor - Model 510
2144	2144	V3R6M0	Processor - Model 510

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
2150	2150	V3R6M0	Processor - Model 530
2151	2151	V3R6M0	Processor - Model 530
2152	2152	V3R6M0	Processor - Model 530
2153	2153	V3R6M0	Processor - Model 530
2154	2154	V3R6M0	Processor - Model 53S
2155	2155	V3R6M0	Processor - Model 53S
2156	2156	V3R6M0	Processor - Model 53S
2157	2157	V3R6M0 + FC 1988	Processor - Model 53S
2159	2159	V4R2M0	Processor - Model 170
2160	2160	V4R2M0	Processor - Model 170
2161	2161	V4R1M0	Processor - Model S20
2162	2162	V3R6M0 + FC 1988	Processor - Model 530
2163	2163	V4R1M0	Processor - Model S20
2164	2164	V4R2M0	Processor - Model 170
2165	2165	V4R1M0	Processor - Model S20
2166	2166	V4R1M0	Processor - Model S20
2170	2170	V4R2 +	Processor - Model S20
2175	2175	V4R1M0	Processor - Model 620
2176	2176	V4R2M0	Processor - Model 170
2177	2177	V4R1M0	Processor - Model S20
2178	2178	V4R1M0	Processor - Model S20
2179	2179	V4R1M0	Processor - Model 620
2180	2180	V4R1M0	Processor - Model 620
2181	2181	V4R1M0	Processor - Model 620
2182	2182	V4R1M0	Processor - Model 620
2183	2183	V4R2M0	Processor - Model 170
2188	2188	V4R3M0	Processor - Model 650
2189	2189	V4R3M0	Processor - Model 650
2207	2207	V4R3M0	Processor - Model S40
2208	2208	V4R3M0	Processor - Model S40
2237	2237	V4R1M0	Processor - Model 640
2238	2238	V4R1M0	Processor - Model 640
2239	2239	V4R1M0	Processor - Model 640
2240	2240	V4R1M0	Processor - Model 650
2243	2243	V4R1M0	Processor - Model 650
2256	2256	V4R1M0	Processor - Model S40
2257	2257	V4R1M0	Processor - Model S30
2258	2258	V4R1M0	Processor - Model S30

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
2259	2259	V4R1M0	Processor - Model S30
2260	2260	V4R1M0	Processor - Model S30
2261	2261	V4R1M0	Processor - Model S40
2289	2289	V4R3M0	Processor - Model 170
2290	2290	V4R3M0	Processor - Model 170
2291	2291	V4R3M0	Processor - Model 170
2292	2292	V4R3M0	Processor - Model 170
2310	2310	V4R1M0	Processor - Model SB1
2311	2311	V4R1M0	Processor - Model SB1
2312	2312	V4R3M0	Processor - Model SB1
2313	2313	V4R3M0	Processor - Model SB1
2320	2320	V4R1M0	Processor - Model S30
2321	2321	V4R1M0	Processor - Model S30
2322	2322	V4R1M0	Processor - Model S30
2385	2385	V4R3M0	Processor - Model 170
2386	2386	V4R3M0	Processor - Model 170
2388	2388	V4R3M0	Processor - Model 170
25A6	None	-	Voltage regulator
25A7	None	-	Voltage regulator
25A2	2150	-	Processor clock card
25A3	2157, 2162	-	Processor clock card
25A8	2151, 2152, 2153, 2154, 2155, 2156	-	Processor clock card
2605	2605	V2R1M0	ISDN Basic Adapter
2609	2609 2654, 2655, 2657, 2658	V2R1M0	2-line EIA-232/V.24 Communications Adapter <ul style="list-style-type: none"> <li>• FC 2654, two 20 foot enhanced cables</li> <li>• FC 2655, two 20 foot unenhanced cables</li> <li>• FC 2654, two 50 foot enhanced cables</li> <li>• FC 2654, two 50 foot unenhanced cables</li> </ul>
2610	2656, 2659	V2R1M0	2-LINE X.21 Communications Adapter <ul style="list-style-type: none"> <li>• FC 2656, two 20 foot cables</li> <li>• FC 2659, two 50 foot cables</li> </ul>
2612	2612	V3R0M5	EIA 232/V.24 One-Line Adapter
2613	2613	V3R0M5	V.35 One-Line Adapter
2614	2614	V3R0M5	X.21 One-Line Adapter
2617	2617	V2R2M0	Enhanced Ethernet I/O Processor
2618	2618	V2R3M0	Fiber Distributed Data Interface / FDDI IOP
2619	2619	V2R2M0	Enhanced Token-Ring I/O Processor
2620	2620	V2R3M0	Cryptographic IOP / Full function
2621	2621	V2R1M0	SCSI Tape I/O Processor

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
2623	2623	V2R1M0	Multiline Communications I/O Processor
2624	2624	V2R1M0	Removable Media Magnetic Storage I/O Processor
2626	2626	V2R1M0	Token-Ring I/O Processor
2628	2628	V2R3M0	Cryptographic IOP / Limited function
2629	2629	V4R1M0	LAN/WAN/WSC IOP
2630	5040, 5060	V3R0M5	Primary I/O Card Unit Extension Adapter
2631	5040,	V3R0M5	Secondary I/O Card Unit Extension Adapter
2632	5042	V2R1M0	Secondary I/O Card Unit Extension Adapter
2639	None	-	Air Flow card for IOA card slot, Models 3xx
2640	None	-	Half High Air Flow card, Models 3xx
264A	None	-	Air Flow card for IOP card slot, Models 3xx
2641	None	-	Air Flow card for stage 2 hardware
2644	2644	V2R2M0	Tape I/O Processor / 370 Channel Adapter for 3490-CXX
2645	2645	V4R1M0	EIA232/V.24 2 line IOA (20E)
2654	2654	V4R1	EIA232/V.24 2 line IOA (20E)
2655	2655	V4R1M0	EIA232/V.24 2 line IOA (20)
2656	2656	V4R1M0	X.21 2 Line IOA (20)
2657	2657	V4R1M0	EIA232/V.24 2 line IOA (50E)
2658	2658	V4R1M0	EIA232/V.24 2 line IOA (50)
2659	2659	V4R1M0	X.21 2 Line IOA (50)
2663	2668	V3R1M0	LAN Controller IOP
2664	2664	V3R0M5	Integrated Fax I/O Processor
2665	2665	V2R3M0	Shielded Twisted Pair Dist Data Interface / SDDI IOP
2666	2666	V2R3M0	High Speed Comm IOP / Frame Relay Adapter
2668	2668	V3R1M0	Wireless LAN IOA (requires 2663)
266A	2668	V3R1M0	Wireless LAN Virtual IOA (reported CCIN only)
2669	2669	-	Shared Bus Interface Card
2670	2670	V3R0M5	Optical Bus Expansion Receiver in expansion tower Models 310, 320, 30S
2676	none	-	I/O Current Share regulator, Models 3xx
2673	none	-	Optical Bus Adapter, Models 530, 53S
2674	none	-	Optical Bus Adapter, Models 500, 510, 50S
2677	none	-	I/O Current Share regulator
2678	none	-	I/O Current Share regulator, Models 3xx
2680	2680	-	Optical Bus Receiver (266Mbps)
2683	-	-	OptiConnect Receiver (266 Mbps)
2685	-	-	OptiConnect Receiver (1063 Mbps)
2686	2686	-	OLP - Optical Link Proc. (266 Mbps)

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
2688	2688	-	OLP - Optical Link Proc. (1063 Mbps)
2695	-	V4R1M0	Bus Adapter (for OLPs)
2696	-	V4R1M0	Bus Adapter (for OLPs)
2699	2629, 2699	V4R1M0	2-Line WAN SPD IOA
2700	None	-	I/O Regulator, Stage 2 hardware
2701	None	-	Voltage Regulator / 3.6V Regulator, Stage 2 hardware
2707	None	-	Voltage Regulator / 3.6V Regulator, Stage 2 hardware
2708	None	-	I/O Regulator, Stage 2 hardware
2720	2720, 9720	V4R1M0	PCI Twinax (4 port) with Comm port IOA
2721	2721, 9721	V4R1M0	PCI 2-port WAN Multi-protocol IOA
2722	2722, 9722	V4R1M0	PCI Twinaxial IOA (8-port)
2723	2723, 9723	V4R1M0	PCI Ethernet IOA
2724	2724, 9724	V4R1M0	PCI 16/4 Mbps Token Ring IOA
2726	2726	V4R1M0	PCI RAID Disk/Tape IOA
2728	2728, 9728	V4R1M0	PCI Disk/Tape IOA
2729	2729	V4R1M0	PCI External SCSI Tape IOA
2730	-	V4R1M0	Programmable Power regulator
2740	2740	V4R2M0	PCI RAID Disk/Tape Controller IOA
2741	2741	V4R2M0	PCI RAID Disk/Tape Controller IOA
2809	2809	V4R1M0	PCI Controller
2810	2810, 2838, 2811, 2812, 2815, 2816, 2819, 9738	V4R1M0	SPD IOP Host for PCI IOA
2811	2811, 2810	V4R2M0	PCI 25Mbps UTP ATM IOA
2812	2812, 2810	V4R2M0	PCI 45Mbps Coax T3/DS3 ATM IOA
2815	2815, 2810	V4R2M0	PCI 155Mbps UTP OC3 ATM IOA
2816	2816, 2810	V4R2M0	PCI 155Mbps MMF ATM IOA
2818	2818, 2810	V4R2M0	PCI 155Mbps SMF OC3 ATM IOA
2819	2819, 2810	V4R2M0	PCI 34Mbps Coax E3 ATM IOA
2830	2830	V4R1M0	Main Storage Expansion
2838	2838, 2810, 9738	V4R1M0	PCI 100/10 Mbps IOA
2850	2850, 2852	V4R1M0	PCI Integrated Netfinity Server - Proc - Model 150
2850	2851	V4R1M0	PCI Integrated Netfinity Server - Proc - Models 6xx/Sxx
2850	2854	V4R2M0	PCI Integrated Netfinity Server - Proc - Models 6xx/Sxx
2850	2857	V4R1M0	PCI Integrated Netfinity Server - Proc - Model 170, 250
285A	285x	—	PCI Integrated Netfinity Server - Bridge Card
2860	2860, 6616, 6617, 285x	V4R1M0	16MB DIMM IOP memory expansion

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
2861	2861, 6616, 6617, 285x	V4R1M0	32MB DIMM IOP memory expansion
2862	2862, 6616, 6617, 285x	V4R1M0	128MB DIMM IOP memory expansion
2960	2960	-	120V 15A 6 foot line cord
2961	2961	-	240V 10A 6 foot line cord
3001	3001	V4R1M0	32MB Main Storage DIMM
3002	3002	V4R1M0	128MB Main Storage DIMM
3003	3003	V4R3M0	256MB Main Storage DIMM
3004	3004	V4R3M0	256MB Main Storage DIMM
3102	3102	V3R0M5	16MB Main Storage / Model 310
3103	3103	V3R0M5	32MB Main Storage / Model 310
3104	3104	V3R0M5	64MB Main Storage / Model 310
3120	3120	V3R0M5	8MB Main Storage / Model 300
3121	3121	V3R0M5	8MB Main Storage Expansion / Model 300. Two 3121 cards are required for feature 3121. Each card is 4MB for a total of 8MB.
3122	3122	V3R0M5	32MB Main Storage / Model 300
3130	3130	V2R1M1	32MB Main Storage / Model 310
3131	3131	V2R1M1	64MB Main Storage / Model 310
3132	3132	V2R1M1	128MB Main Storage / Model 310
3133	3133	V2R2M0+	64MB Main Storage / Model 320
3134	3134	V2R2M0+	128MB Main Storage / Model 320
3135	3135	V2R3M0	256MB Main Storage / Model 320
3136	3136	V3R0M5	128MB Main Storage / Model 310
3138	3138	V3R0M5	64MB Main Storage / Model 300
3144	3144	V3R0M5	8MB Main Storage / Model 300
3145	3145	V3R0M5	16MB Main Storage / Model 300
3146	3146	V3R0M5	32MB Main Storage / Model 300
3147	3147	V3R0M5	32MB Main Storage / Model 300
3149	3149	V3R0M5	128MB Main Storage / Model 310
3152	3152	V3R6M0	32MB Main Storage / Models 510, 50S
3153	3153	V3R6M0	64MB Main Storage / Models 510, 50S
3154	3154	V3R6M0	128MB Main Storage / Models 510, 50S
3155	3155	V3R6M0	256MB Main Storage / Models 510, 50S
3156	3156	V3R0M5	64MB Main Storage / Model 30S
3157	3157	V3R0M5	128MB Main Storage / Model 30S
3158	3158	V3R0M5	256MB Main Storage / Model 30S
3161	3161	V3R0M5	32MB Main Storage / Model 30S
3162	3162	V3R6M0	128MB Main Storage / Models 530 & 50S
3163	3163	V3R6M0	256MB Main Storage / Models 530 & 50S
3164	3164	V3R6M0	512MB Main Storage / Models 530 & 50S

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
3165	3165	V3R6M0	1024MB Main Storage / Models 530 & 53S
3166	3166	V3R7M0	256MB Main Storage / Models 530 & 53S
3179	3179, 9179	V4R2M0	Main Storage (256MB)
3180	3180, 8180	V4R2M0	Main Storage (512MB)
3182	3172, 3182, 8172	V4R1M0	2x-16MB Main Storage SIMM
3184	3184	V3R6M0	32MB Main Storage / Model 500
3185	3185	V3R6M0	64MB Main Storage / Model 500
3186	3186	V3R6M0	128MB Main Storage / Model 500
3187	3187	V3R6M0	256MB Main Storage / Model 500
3189	3189	V4R1M0	128MB Main Storage - Models 640/650/S30/S40/SB1
3190	3190, 9190	V4R1M0	256MB Main Storage - Models 640/650/S30/S40/SB1
3191	3191	V4R1M0	512MB Main Storage - Models 640/650/S30/S40/SB1
3192	3192	V4R1M0	1024MB Main Storage - Models 640/650/S30/S40/SB1
	5023	V4R1	Software version V4R1
	5024	V4R2	Software version V4R2
	5025	V4R3	Software version V4R3
	5032	-	Removable Media cluster box
	5040	-	Secondary Rack
	5042	-	Secondary Rack
	5043	-	Primary to secondary rack conversion
	5044	-	System Unit Expansion Rack
	5052	-	16 Disk Storage Expansion Unit (F2)
	5055	V4R1M0	8 Disk Storage Expansion Unit - Model 640/S30 System Unit
	5057, 9251	-	16 Disk Storage Expansion Unit - Model 650/S40 System Unit
	5058	-	16 Disk Storage Expansion Unit (U2)
	5064	V4R1	System Unit Expansion
	5065	V4R4	PCI Expansion Tower
	5070	-	System Unit Exp (266 Mbps)
	5071	-	System Unit Exp (266 Mbps) - U2
	5072	-	System Unit Exp (1063 Mbps)
	5073	-	System Unit Exp (1063 Mbps) - U2
	5080	-	Storage Unit Exp (266 Mbps)
	5081	-	Storage Unit Exp (266 Mbps) - U2
	5082	-	Storage Unit Exp (1063 Mbps)
	5083	-	Storage Unit Exp (1063 Mbps) - U2

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
	5143	-	Feature Bulk Power supply
	5150	-	External Battery Unit - Models 640/650/S30/S40/SB1
	5151	-	Bulk Power supply Expansion
	5153	-	Redundant Power Supplies
	5502	-	Alternate IPL Specify Code QIC-3040
	5503	-	Alternate IPL Specify Code for 9347
	5504	-	Alternate IPL Specify Code for 3490-Exx/Fxx
	5505	-	Alternate IPL Specify Code for 2440
	5506	-	Alternate IPL Specify Code for QIC-4000
	5507	-	Alternate IPL Specify Code for 9348
	5508	-	Alternate IPL Specify Code for 3422
	5509	-	Alternate IPL Specify Code for 3430
	5510	-	Alternate IPL Specify Code for QIC-525MB
	5511	-	Alternate IPL Specify Code for 3480
	5512	-	Alternate IPL Specify Code for 3490-Cxx
	5513	-	Alternate IPL Specify Code for 3490
	5514	-	Alternate IPL Specify Code for 7208
	5515	-	Alternate IPL Specify Code for 3570
	5516	-	Alternate IPL Specify Code for QIC-1.2GB
	5517	-	Alternate IPL Specify Code for QIC-2.5GB
	5518	-	Alternate IPL Specify Code for QIC-13.0GB
	5519	-	Alternate IPL Specify Code for 3590
	5520	-	Complete System Specify Code
	5521	-	Partial System Specify Code
	5540	-	System Console Twinax WSC Specify Code
	5541	-	System Console ASCII WSC Specify Code
	5542	-	System Console Localtalk Specify Code
	5543	-	System Console Comm Specify Code
	5544	-	System Console Ops Console Specify Code
	5601	-	OptiConnect in Rack
	5602	-	OptiConnect in Tower
	5603	-	OptiConnect in System Unit Expansion
6050	6050	V2R2M0	Twinaxial Workstation I/O Processor
6054	6054	V2R3M0	Workstation Adapter / Apple**
6109	6109, 1210	V3R0M5	988MB Internal Disk Unit
6112	6112	V2R1M0	Mag Storage Device I/O Processor
6135	6135	-	Diskette Unit (5.25 inch)
6140	6140	V2R1M0	Twinaxial Workstation IOP

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
6141	6141	V2R1M0	ASCII Workstation IOP
6142	6142	-	ASCII 12 Port Workstation Attach
6146	6146	V3R1M0	External Diskette Adapter IOA • plugs into FC 2624
6147	6147	V3R0M5	Diskette Adapter • plugs into 9152 or 9153.
6149	6149	V4R1M0	16/4 Mbps Token Ring IOA • plugs into Integrated Servers • or LAN/WAN IOP
6153	6153, 6173	V2R1M0	V.35 Communications Adapter • FC6153, 20 foot cable • FC6173, 50 foot cable
6180	6180	V4R1M0	Twinaxial WSC IOA
6181	6181	V4R1M0	Ethernet IEEE/802.3 IOA
6335	1262, 6335	V3R1M0	840MB QIC Tape Unit
	6368	-	1.2GB F-1 1/4-Inch Cartridge Tape
	6369	-	2.5GB F-1 1/4-Inch Cartridge Tape
6378	1378, 1250	V3R0M5	525MB 1/4-Inch Cartridge Tape
6379	1379, 1251	V3R0M5	1.2GB 1/4-Inch Cartridge Tape
6380	1380, 1252, 1260	V3R0M5	2.5GB 1/4-Inch Cartridge Tape
6381	6381	V4R1	2.5GB F-1 1/4-Inch Cartridge Tape
6382	6382	V4R1M0	4GB QIC Tape Unit, enclosed style
6385	6385	V3R7M0 V3R2M0	13.0GB QIC Tape Unit
6390	1261, 6390	V3R0M5	7GB 8MM Cartridge Tape
6481	6481	V4R2	1.25GB F-1 1/4-Inch Cartridge Tape
6482	6482	V4R2M0	4GB QIC Tape Unit, tray style
6485	6485	V4R2	13.0GB F-2 1/4-Inch Cartridge Tape
6490	6490	V4R2	7.0GB F-1 8mm Cartridge Tape
6500	6500	V2R2M0	SCSI Magnetic Storage IOP / (for 9337-0XX/1XX DASD)
6501	6501	V2R3M0	SCSI Magnetic Storage IOP / SCSI Tape IOP • Attaches external SCSI Tape units • Attaches the 9337 external DASD units.
6502	6502	V3R0M5	High Availability Internal DASD Adapter (Integrated Device Parity)
6503	6502	-	2MB Cache for 6502 Adapter

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
6506	6516, 6517, 6518, 6519, 6526, 6527, 6528, 6529	V3R1M0	File Server IOP (Card only) <ul style="list-style-type: none"> <li>• FC6516, 16MB one Port</li> <li>• FC6517, 32MB one Port</li> <li>• FC6518, 48MB one Port</li> <li>• FC6519, 64MB one Port</li> <li>• FC6526, 16MB two Port</li> <li>• FC6527, 32MB two Port</li> <li>• FC6528, 48MB two Port</li> <li>• FC6529, 64MB two Port</li> </ul>
6509	6516, 6517, 6518, 6519, 6526, 6527 6528, 6529	V3R1M0	File Server IOP 16MB SIMM (Memory Expansion)
6510	6516, 6517, 6518, 6519	V3R1M0	File Server LAN IOA (1 Port LAN IOA)
6512	6512	V3R1M0 + FC 1985	High Availability Internal DASD Adapter, 4 MB cache (Integrated Device Parity)
6513	6513	V3R7M0	Internal Tape Device Controller SPD IOP
6516	6516	-	16MB One-Port FSIOP
6517	6517	-	32MB One-Port FSIOP
6518	6518	-	48MB One-Port FSIOP
6519	6519	-	64MB One-Port FSIOP
6520	6526, 6527, 6528, 6529	V3R1M0	File Server LAN IOA (2 Port LAN IOA)
6530	6530	V3R0M5	Internal DASD Adapter SPD IOP
6532	6532	V4R1M0	Internal DASD RAID Adapter SPD IOP
6533	6533	V4R2M0	Internal DASD RAID Adapter SPD IOP
6534	6534	V4R1M0	External SCSI Tape Controller SPD IOP
6602	6652, 1211	V3R0M5	1.031GB Internal Disk Unit
6603	6650, 1212	V3R0M5	1.967GB Internal Disk Unit
6605	1205, 6605	V3R0M5	1.031GB Internal Disk Unit
6606	1206, 6606	V3R0M5	1.967GB Internal Disk Unit
6607	1207, 6607	V3R0M5	4.194GB Internal Disk Unit
6616	6616	V4R1M0	SPD Integrated Netfinity Server - 2 slot SPD
6617	6617	V4R2M0	SPD Integrated Netfinity Server - 3 slot SPD
6618	6618	V4R2M0+	SPD Integrated Netfinity Server - 3 slot SPD
	6650	-	1.96GB Disk Unit
	6652	-	1.03GB Disk Unit
6713	6713, 7713, 8713, 8813	V4R1M0	8.58GB Internal Disk Unit
6714	6714, 6824, 8214, 8824	V4R2M0	17.54GB Internal Disk Unit
6717	6717, 8817	V4R3M0	8.58GB Internal Disk Unit
6806	6806	V4R1M0	1.96GB Internal Disk Unit
6807	6807	V4R1M0	4.19GB Internal Disk Unit
6813	6813	V4R1M0	8.58GB Internal Disk Unit
6824	6824	V4R2M0	17.54GB Internal Disk Unit

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
6906	6906	V4R1M0	1.96GB Internal Disk Unit
6907	6907	V4R1M0	4.19GB Internal Disk Unit
7101	7101	V4R2M0	Model 170 - System Unit Expansion
7128	7128	V4R1M0	Disk Expansion Cage
7130	7130	V4R1M0	Removable Media Expansion Cage
7607	7607	-	4.19GB F-2 Disk Unit
-	7713	V4R1	8.58Gb U-2 Disk Unit
8172	8172	-	Base Main Storage (32MB)
-	8180	V4R1	Optical Base Main Storage (512MB) (8x64MB)
-	8191	V4R1	Optical Base Main Storage (512MB) (32x16MB)
-	8192	V4R1	Optical Base Main Storage (1024MB) (16x64MB)
8210	8210	-	Optional Main Storage (64MB)
8714	8714	V4R2	17.54GB U-2 Internal Disk Unit
8824	8824	V4R2M0	17.54GB Internal Disk Unit
-	9020	-	V.35 20 foot cable
-	9021	-	X.21 20 foot cable
-	9022	-	RS-232 20 foot cable
-	9023	-	V.24 20 foot cable
-	9024	-	802.5 Token - Ring cable (2.44m)
-	9025	-	Ethernet cable AUI (3m)
-	9171	V4R2	Base Main Storage (256MB) (4x64MB)
9190	9190	V4R2	Base Main Storage (256MB) (16 x 16MB)
9364	9364	V4R1	System Unit Expansion
9707	9707	-	4.19GB U-2 Disk Unit
9720	9720	V4R1	Base PCI WAN/Twinaxial IOA
9721	9721	V4R1	Base PCI Two-line WAN IOA
9723	9723	V4R1	Base PCI Ethernet IOA
9724	9724	V4R1	Base PCI Token-Ring IOA
9728	9728	V4R1	Base PCI Disk Unit Controller
9738	9738	V4R1	Base PCI 100/10Mbps Ethernet IOA
9745	9745	V4R3M0	Base PCI Two-line WAN IOA
	9814	-	Wireless antenna cable (20ft)
	9815	-	Wireless antenna cable (50ft)
	9835	-	V.24 50ft enhanced cable
	9836	-	RS-232 50ft cable
	9838	-	V.35 50ft cable
	9839	-	X.21 50ft cable
	9879	-	V.35 20ft / 6m CCITT cable
	9880	-	V.35 80ft / 24.4m CCITT cable

Table 8. Model 170, 250, 6xx/Sxx, 7xx Feature and Specify Codes (continued)

Feature or Card Type	Used in Feature Codes	Minimum 9406 OS/400 Level	Name in System Configuration List / Notes
	9882	-	V.36/RS449 20ft / 6m CCITT cable
	9883	-	V.36/RS449 80ft / 24.4m CCITT cable
	9884	-	V.36/RS449 150ft / 45.7m CCITT cable
	9885	-	X.21 20ft / 6m CCITT cable
	9889	-	Yogi Directional antenna
	9890	-	Omni Directional antenna
	9891	-	Hemispherical Directional antenna
9892	9892	-	Directional antenna
9980	9980	-	Serpentine cable connection

## Appendix C. Configuration Rules for AS/400 Models 170/250/6xx/SB1/7xx

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## List of Abbreviations

**AF.** Air flow card.

**AIPL.** Alternate IPL. IPL performed using IPL data (microcode and operating system) from a removable media device.

**ATM.** Asynchronous Transfer Mode. A Communications protocol capable of high speed over many different transmission media (cable, fiber, etc).

**BCS.** Base Communications Subsystem.

**CCIN.** Component/Card Identification Number. The identifier for individual card, IOP, device types that may or may not be electronically reported.

**CIN.** Cable Identification Number. The identifier that references cable types for a given feature.

**CISC.** Complex Instruction Set Computer. IMPI type AS/400 systems.

**CEC.** Central Electronics Complex. This is the frame containing the processors.

**DIMM.** Dual In-line Memory Module. This memory card is double the width of a SIMM.

**DSA.** Direct Select Address. The wired address of an IOP

**ECS.** Electronic Customer Support.

**EIA.** Electronics Industries Association.

**EIA unit.** 44.45 mm (1.75 inches). There are 32 EIA units of vertical space in a standard 1.6 meter rack.

**FC.** Feature Code.

**FSIOP.** See Integrated Netfinity Server

**GB.** Gigabyte. One gigabyte of storage is 1,073,741,824 bytes.

**IMPI.** Internal Microprocessor Instruction. Model B/C/D/E/F, Model 200, Model 20S, and Model 3xx systems (CISC systems)

**Integrated Netfinity Server.** Integrated Netfinity Server — Any of the Features which provide OS/2 or NT direct server support, where the server networks can access the internal AS/400 disk I/O. Takes SPD form (eg. 65xx, 6616, 6617) or PCI form (eg. 2851, 2854, 2857).

**I/O.** Input/Output.

**IOA.** I/O Adapter (card). Either a PCI card or a daughter card for SPD Book Style cards.

**IOP.** I/O Processor (card). Usually an SPD Book style card.

**IPL.** Initial Program Load.

**LAN.** Local Area Network.

**MB.** Megabyte. One megabyte of storage is 1,048,576 bytes.

**MES.** Machine Equipment Specification, an upgrade to existing hardware.

**MFIOP.** Multiple Function IOP. Provides IPL, console, ECS, and base DASD support.

**MS.** Main Storage.

**PCI.** (1) Port —Controller Interface. This is the style and bus architecture of cards in Model 600/620/S10/S20 System Units. (2) Similar in form and electronics to PC I/O cards.

**RAID.** Redundant Array of Independent Disks.

**RISC.** Reduced Instruction Set Computer. Models 4xx, 5xx, 6xx, 7xx, and SB1 systems.

**RRPS.** Rack to Rack Power Sequence.

**SC.** Specify Code.

**SCSI.** Small Computer Systems Interface. The device interface for many storage devices attached to the system.

**SIMM.** Single In-line Memory Module. This is a 72 pin memory card.

**SPCN.** System Power Control Network.

**SPD Bus.** System Peripheral Distribution Bus. Style and Bus architecture from V2R1 through Model 6xx/7xx/SB1 that use Book-style cards.

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## Definitions

The following terms are used:

### **xxxx-yyy, or MTxxxx-yyy (machine types-models)**

The four-digit machine type codes (xxxx) identify a single machine type for reference and order purposes.

The model is indicated by the three-digit model code (yyy).

### **FCxxxx or FC xxxx (feature codes)**

The four-digit feature codes identify features that the customer may select on the order.

### **CCIN.xxxx**

CCIN number of a card or device. This is not a feature number, but may be required.

### **SCxxxx or SC.xxxx (specify codes)**

The four-digit specify codes are similar to feature codes. An AS/400 specify code is a no-charge code that gives additional information to the order. Specify Codes are used to indicate languages, types of system set-up, customer preferences, cable lengths, assembly or location direction, or other informative addition to the customer's order.

### **#xxxx or CCIN.xxxx (card/cable/assembly types)**

Four-digit card, assembly, or cable numbers are used where they aid in feature descriptions.

### **Card enclosures**

- System Units
- FC 507x I/O Expansion Towers
- FC 508x Storage Expansion Towers
- System Unit Expansion (FC 5064/9364) with FC 7129 PCI Card cage
- Saytem Unit Expansion (FC 5064/9364) with FC 7131 SPD (Book) Card cage
- FC 5044 I/O Bus Expansion Rack

### **Frames**

A frame is a tower or a rack, whichever applies in the specific situation.

### **I/O Buses**

I/O buses (often known as just "buses") connect the I/O processors (IOPs) to the system processor.

### **IOP addressing**

IOPs are addressed in two modes:

- **Direct select addressing (DSA)** is the method for selecting a physical card slot during IPL or servicing when only a limited set of functions is allowed.
- **Logical bus unit addressing** is the method for selecting an IOP during normal operation, after the IOP and its subsystem has been identified and configured into the system. The logical address may differ from the direct select address.

### **IOP Direct select address**

This is the IOP address associated with a physical card slot, the DSA.

### **IOP Logical address**

This is the IOP address associated with the logical ordering of IOPs along a system bus. This address is assigned to the IOP at IPL time.

### **Rack**

A rack is a 1.6 meter frame for enclosures and devices not installed in towers.

Each rack contains a power control section, sequenced by the primary tower.

Specific rack configurations are recommended for simplicity, consistency, and specific technical reasons. These are shown in "Supported Rack Configurations" on page 362.

### **Tower**

A tower is a .75 meter system frame which contains a card enclosure (card cage) and provides locations for power supplies and internal storage devices.

For power sequencing purposes, each system must have one **primary** tower, the System Unit Tower. All other towers and racks must be **secondary**.

---

## **AS/400 Model 170, 250, 6xx, 7xx, and SB1 Systems**

### **Minimum System**

The *minimum system* is the set of hardware allowing basic function of the system to occur.

The **Base Hardware** for the minimum system consists of:

- One 940x Model 170, 250, 6xx or SB1 System Unit.
- ECS support.
- Disk Unit Controller or MFIOP.
- One load source DASD, installed in the \*LS position shown in a system unit diagram.
  - Minimum 2GB DASD (most ship with 4GB or more as \*LS)
- One CD-ROM device.

- One IOP for controlling a system console.
- One system console (customer specified)

## Model 170, 250

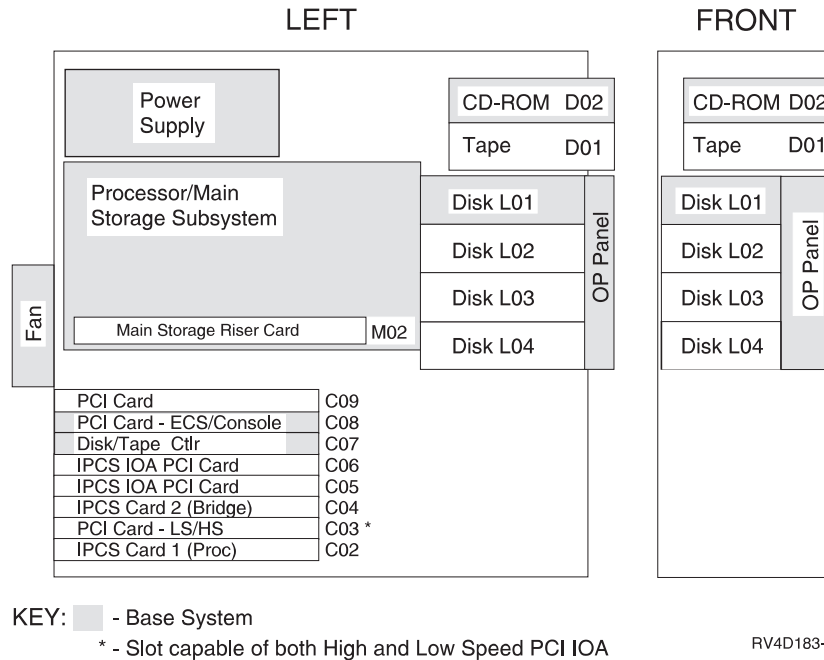


Figure 27. Model 170, 250 CEC — locations

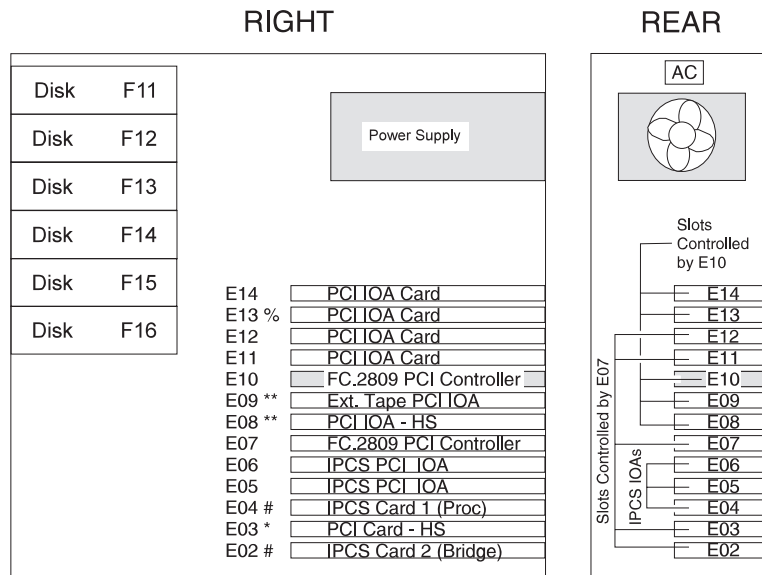


Figure 28. Model 170, 250 Expansion (sidecar)

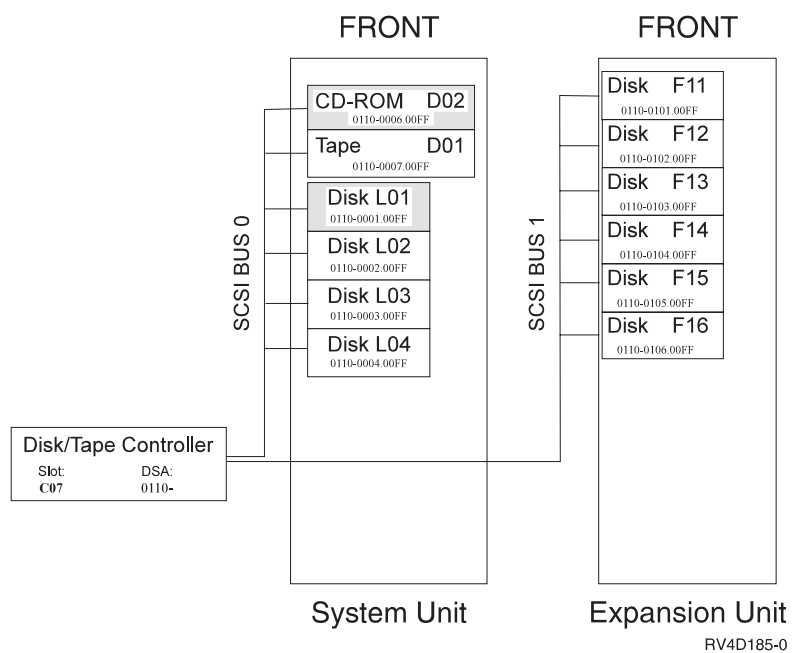


Figure 29. Model 170, 250 Disk/Tape Addressing

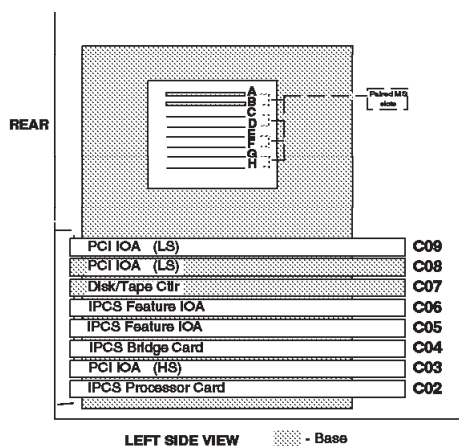


Figure 30. Model 170 Processor FC 2289, FC 2290, FC 2291, FC 2292 – – combined processor – I/O style backplane

### Model 170, 250 - Processor and Main Storage Features:

Table 9. Main Storage Features

FC 3001	32MB
FC 3002	128MB
FC 3003	256MB
FC 3004	256MB
FC 3022	128MB
FC 3024	256MB

Table 10. Model 170 Processor and Main Storage Features — V4R2

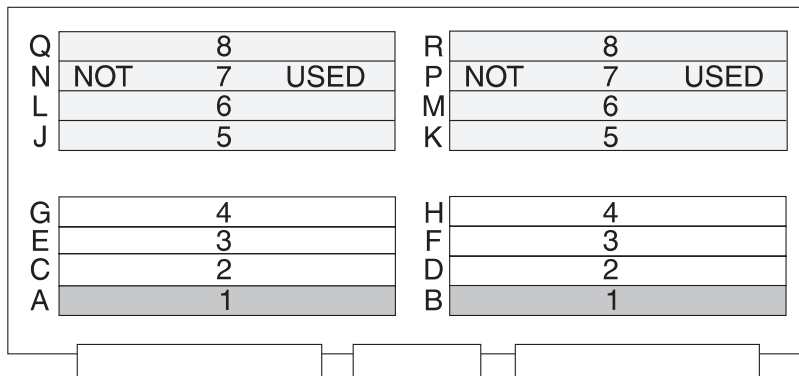
Description	FC 2159, FC 2160	FC 2164, FC 2176, FC 2183
Memory Organization	DIMM pairs	DIMM pairs
MIN main storage (MB)	64	256
MAX main storage (MB)	832	1024

Table 10. Model 170 Processor and Main Storage Features — V4R2 (continued)

Description	FC 2159, FC 2160	FC 2164, FC 2176, FC 2183
Number of DIMMs MIN/MAX	2/8	2/8
Allowed DIMM Type	3001, 3002	3001, 3002

Table 11. Model 170 and Model 250 Processor and Main Storage Features — V4R3

Description	Model 170				Model 250
	FC 2290, FC 2289	FC 2291	FC 2292	FC 2385, FC 2386, FC2388	FC 2295, FC 2296
Memory Organization	DIMM	DIMM pairs	DIMM pairs	DIMM pairs	DIMM pairs
MIN main storage (MB)	64	64	256	256	256
MAX main storage (MB)	832	832	1024	3584	1024
Number of DIMMs MIN/MAX	2/8	2/8	2/8	2/16	2/8
Allowed DIMM Type	3001, 3002, 3004	3001, 3002, 3004	3001, 3002, 3004	3001, 3002, 3003, 3004	3022, 3024
Main Storage Riser Expansion	None	None	284A	284A	None

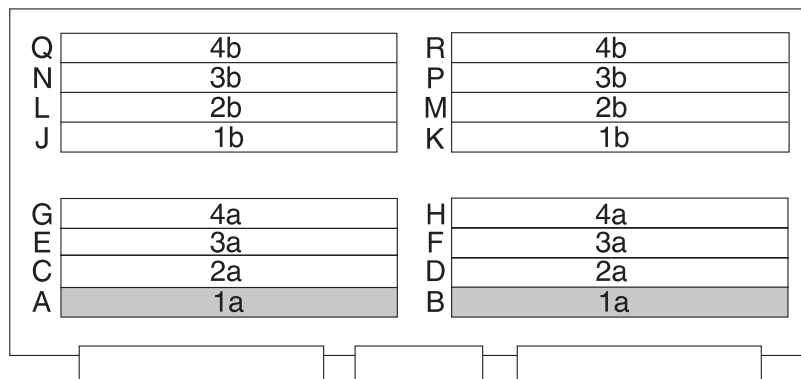


KEY: - Base System

RV4D189-0

Figure 31. Model 170 - FC 2159, FC 2160 — main storage riser type 2839

**Note:** 'b' slots must match 'a' slots if the 'b' slot is used.



KEY:  - Base System

RV4D190-0

Figure 32. Model 170 - FC 2164, 2176, 2183, 2385, 2386, 2388 — Main Storage Riser Card Type 284A

### Model 170, 250 — Base System Features:

Table 12. Model 170, 250 —Base System Features

Description	Location	170 Base Features	250 Base Features
Load source disk	L01	<ul style="list-style-type: none"> <li>9707 (4.19GB; 6607)</li> <li>8813 (8.58GB; 6713)</li> <li>8817 (8.58GB; 6717)</li> <li>8824 (17.57GB; 6824)</li> </ul>	<ul style="list-style-type: none"> <li>9313 (8.58GB; 6713)</li> <li>8917 (8.58GB; 6717)</li> <li>8918 (17.54GB; 6718)</li> <li>8924 (17.54GB; 6714)</li> </ul>
Base Disk/Tape Ctlr	C07	<ul style="list-style-type: none"> <li>9728</li> </ul>	<ul style="list-style-type: none"> <li>9728</li> </ul>
Twinax Console	C09	<ul style="list-style-type: none"> <li>9722 ( 8-port Twinax) requires 2721 in C08 for ECS</li> </ul>	<ul style="list-style-type: none"> <li>2746 ( 8-port Twinax) requires 9745 in C08 for ECS</li> </ul>
Client Access Comm Console	C08	<ul style="list-style-type: none"> <li>9721 (2 port Comm)</li> </ul>	<ul style="list-style-type: none"> <li>9745 (2 port Comm)</li> </ul>
ECS	C08	<ul style="list-style-type: none"> <li>9720</li> <li>9721</li> </ul>	<ul style="list-style-type: none"> <li>9745</li> </ul>
Twinax Console	C08	<ul style="list-style-type: none"> <li>9720 (4 port twinax)</li> </ul>	<ul style="list-style-type: none"> <li>2746 (8 port twinax)</li> </ul>
Client Access Console	C08	<ul style="list-style-type: none"> <li>9721/9745 (2 port com)</li> </ul>	<ul style="list-style-type: none"> <li>9721/9745 (2 port com)</li> </ul>
Operations Console	C08	<ul style="list-style-type: none"> <li>9721/9745 (2 port com)</li> </ul>	<ul style="list-style-type: none"> <li>9721/9745 (2 port com)</li> </ul>
Base LAN - Ethernet 10/100	C03	<ul style="list-style-type: none"> <li>9738</li> </ul>	<ul style="list-style-type: none"> <li>9738</li> </ul>
Base LAN - Ethernet	C09	<ul style="list-style-type: none"> <li>9723</li> </ul>	<ul style="list-style-type: none"> <li>9723</li> </ul>
Base LAN - Tokenring	C09	<ul style="list-style-type: none"> <li>9724</li> </ul>	<ul style="list-style-type: none"> <li>9724</li> </ul>

### Model 170, 250 - System Power Supplies and Battery Backup:

Table 13. Model 170, 250 Power and Battery

Power Feature	Description	Details
Base	Base power	<ul style="list-style-type: none"><li>• No SPCN</li><li>• 340, 350, or 500 watt power supply.</li></ul>
Expansion	Expansion power	<ul style="list-style-type: none"><li>• No SPCN</li><li>• 350 watt power supply.</li></ul>

### Model 170, 250 - Internal Expansion Features:

Table 14. Model 170, 250 Internal Expansion Features

Expansion Feature	Description	Details
7101	System Expansion unit	<ul style="list-style-type: none"><li>• Supports 6 disk units.</li><li>• PCI IOA Slots E02 to E14</li><li>• Uses FC 2809 PCI controller</li></ul>
7102	System Expansion unit	<ul style="list-style-type: none"><li>• Supports 6 disk units.</li><li>• PCI IOA Slots E02 to E14</li><li>• Uses FC 2824 PCI controller</li></ul>

### Model 170, 250 I/O Summary:

Table 15. Model 170, 250 I/O Summary

Description/Function	2159, 2160	2164, 2176, 2183	2289, 2290, 2291, 2292, 2295, 2296, 2385, 2386, 2388
DASD Storage			
Integrated Max (GB)	85.8	85.8	175.4
Total Maximum (GB)	85.8	85.8	175.4
Diskette (Max/Sys)	0	0	0
Int Tape and CDROM Attach (Max/Sys)			
1/4" and/or 8mm Cart	1	1	1
CD-ROM	1	1	1
Ext Tape (Max)	2	2	2
8mm Cart - 7208	2	2	2
1/2" Reel - 9348	2	2	2
1/2" Reel - 2440, 9347	0	0	0
1/2" Cart/Reel - 34xx, 35xx	2	2	2
Tape Libraries-Max			

Table 15. Model 170, 250 I/O Summary (continued)

Description/Function	2159, 2160	2164, 2176, 2183	2289, 2290, 2291, 2292, 2295, 2296, 2385, 2386, 2388
1/2" Cart	2	2	2
8mm	2	2	2
Optical Libraries-Max			
5 1/4" Optical Disk - 3995	2	2	2
Workstation Attach-Max			
TWINAX Controllers	6	6	6
TWINAX Devices	228	228	228
ASCII Controllers	0	0	0
Communications Lines-Max (does not include console)	12	12	<ul style="list-style-type: none"><li>• 18 on model 170</li><li>• 30 on model 250</li></ul>
ATM lines -Max	3	3	<ul style="list-style-type: none"><li>• 3 on model 170</li><li>• 2 on model 250</li></ul>
FAX IOP-Max	0	0	0
LAN Ports Max (All Processor types)	On Model 170	On Model 250	
	6	7	
	<ul style="list-style-type: none"><li>• 4</li><li>• 3</li></ul>	<ul style="list-style-type: none"><li>• 4</li><li>• 5</li></ul>	
<b>Notes:</b>			
1. Integrated Netfinity Server may have one or two ports.			

## Model 600

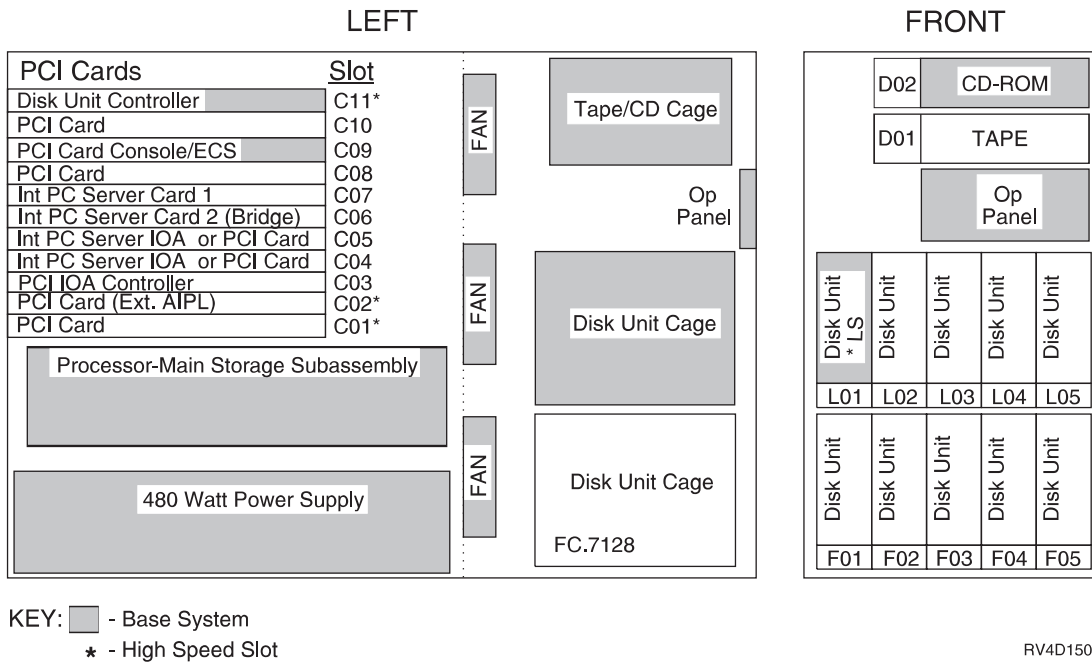


Figure 33. Model 600 CEC

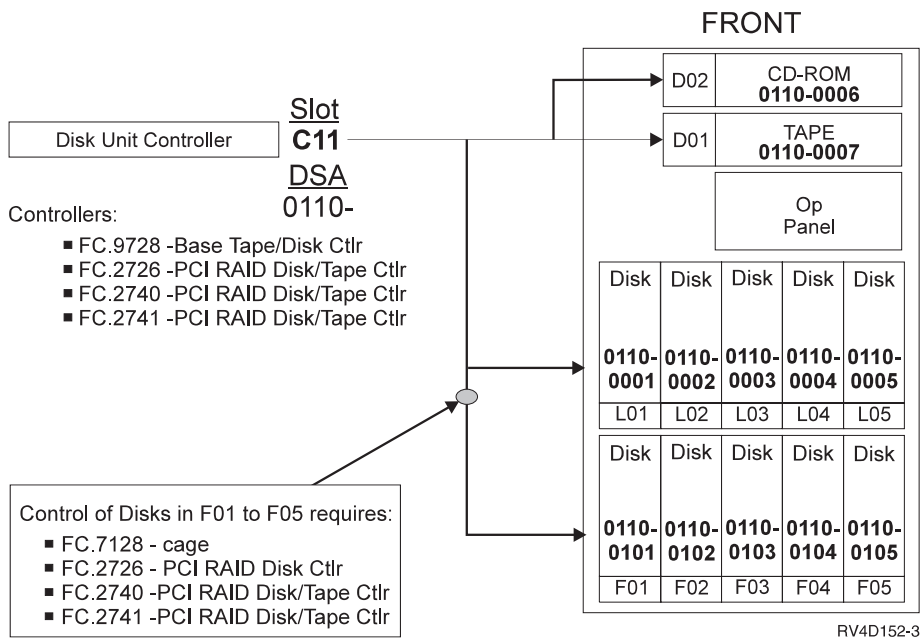


Figure 34. Model 600 Disk/Tape Addressing

## Model 600 - Processor and Main Storage Features:

Table 16. Model 600 Processor and Main Storage Features

Description	FC 2129	FC 2134	FC 2135	FC 2136
Number of Processors	1	1	1	1

Table 16. Model 600 Processor and Main Storage Features (continued)

Description	FC 2129	FC 2134	FC 2135	FC 2136
Number of Base 64MB (FC 3110) SIMM pairs	1	1	1	2
Memory Organization	SIMM pairs <sup>1</sup>	SIMM pairs <sup>1</sup>	SIMM pairs <sup>1</sup>	SIMM quads <sup>2</sup>
SIMM feature types <sup>3</sup>	3182	3182	3182	3182
	3110	3110	3110	3110
MIN main storage (MB)	64	64	64	128
MAX main storage (MB)	384	384	384	512
Number of SIMMs MIN/MAX	2/12	2/12	2/12	4/16
Notes: 1. FC 3110 is 64MB; made up by a pair of 32MB SIMMs. 2. Memory features must be installed in pairs on the 2136; this requires 4 SIMM modules. 3. FC 3172 is equivalent to FC 3182 .				

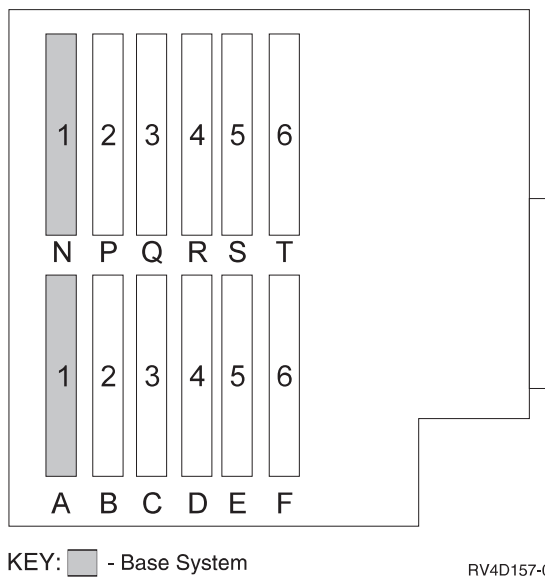
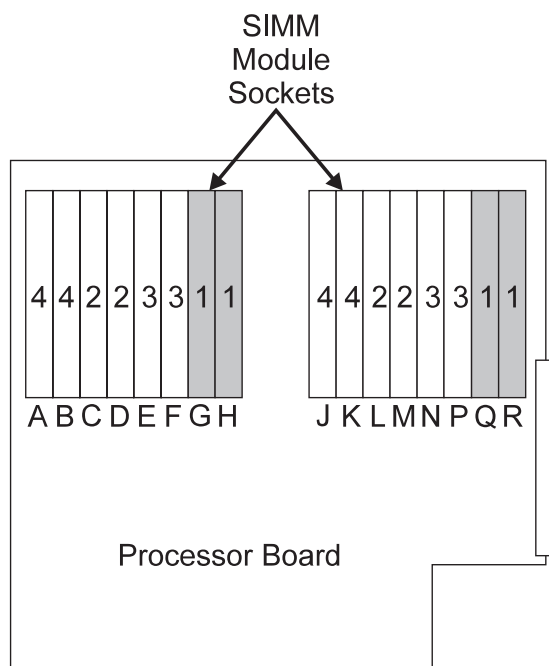


Figure 35. Model 600 - FC 2129, FC 2134, FC 2135



#### **SIMM Install Sequence**

- 1) Base: G and H with Q and R
- 2) C and D with L and M
- 3) E and F with N and P
- 4) A and B with J and K

KEY:  - Base System

RV4D158-0

Figure 36. Model 600 - FC 2136

#### **Model 600 — Base System Features:**

Table 17. Model 600 —Base System Features

Base Feature	Location	Features
Load Source Disk	L01	<ul style="list-style-type: none"> <li>• 9707 (4.19GB; CCIN 6607)</li> <li>• 8813 (8.58GB; CCIN 6713)</li> <li>• 8824 (17.54GB; CCIN 6714)</li> </ul>
Twinax Console	C09	<ul style="list-style-type: none"> <li>• 9720 (Twinax/ECS)</li> </ul>
Base Disks / Tape Ctrl	C11	<ul style="list-style-type: none"> <li>• 9728</li> </ul>
Client Access Comm Console	C09	<ul style="list-style-type: none"> <li>• 9721 (2 port Comm)</li> </ul>
ECS	C09	<ul style="list-style-type: none"> <li>• 9720</li> <li>• 9721</li> </ul>

#### **Model 600 - System Power and Battery Features:**

Table 18. Model 600 Power and Battery

Power Feature	Description	Details
BASE	Base power	<ul style="list-style-type: none"> <li>• No SPCN</li> <li>• 480 watt power supply.</li> </ul>

### Model 600 - Internal Expansion Features:

Table 19. Model 600 Internal Expansion Features

Feature	Description	Details
7128	Disk unit cage	<ul style="list-style-type: none"> <li>• Supports 5 disk units.</li> <li>• Supports concurrent maintenance.</li> </ul>

### Model 600 Summary:

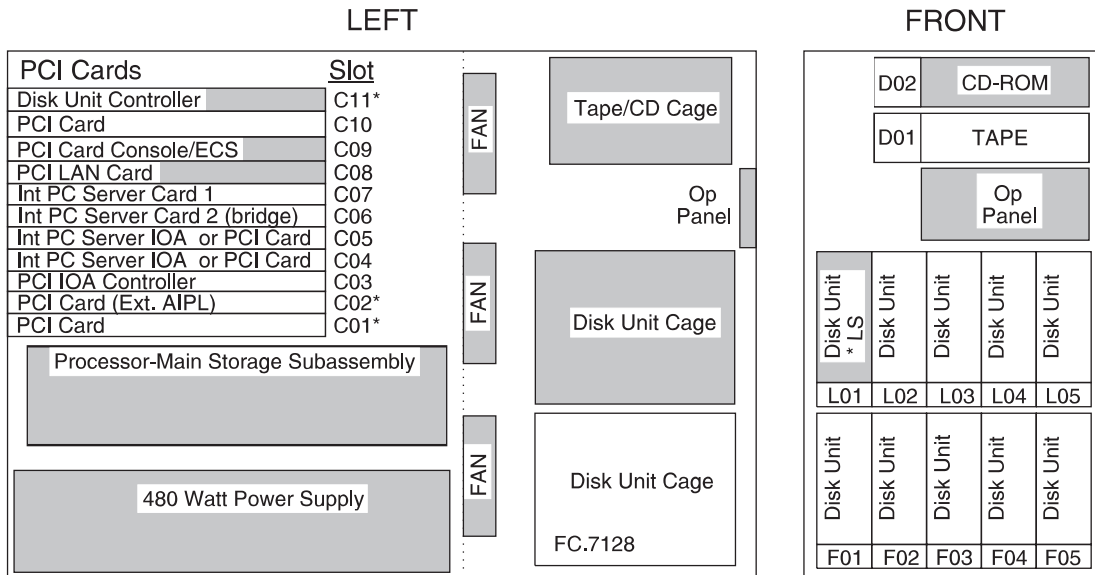
Table 20. Model 600 Summary

Description/Function	FC 2129, FC 2134, FC 2135	FC 2136
DASD Storage		
Integrated Min (GB)	4.194	4.194
Integrated Max (GB)	175.4	175.4
Total Maximum (GB)	175.4	175.4
Diskette (Max/Sys)	0	0
Int Tape and CDROM Attach (Max/Sys)		
1/4" and/or 8mm Cart	1	1
CD-ROM	1	1
Ext Tape (Max)	1	1
8mm Cart - 7208	• 1	• 1
1/2" Reel - 9348	• 1	• 1
1/2" Reel - 2440, 9347	• 0	• 0
1/2" Cart/Reel - 34xx, 35xx	• 1	• 1
Tape Libraries-Max		
1/2" Cart	1	1
8mm	1	1
Optical Libraries-Max		
5 1/4" Optical Disk - 3995	1	1
Workstation Attach-Max		
• TWINAX Controllers	5	5
• TWINAX Devices	188	188
• ASCII Controllers	0	0
Communications Lines-Max (does not include console)	9	9
FAX IOP-Max	0	0

Table 20. Model 600 Summary (continued)

Description/Function	FC 2129, FC 2134, FC 2135	FC 2136
LAN Ports Max	3	3
Integrated Netfinity Server ports Max <sup>1</sup>	• 1	• 1
non-Integrated Netfinity Server LAN ports Max	• 3	• 3
<b>Notes:</b> 1. Integrated Netfinity Server may have one or two ports.		

## Model S10



KEY: - Base System  
 \* - High Speed Slot

RV4D153-3

Figure 37. Model S10 CEC

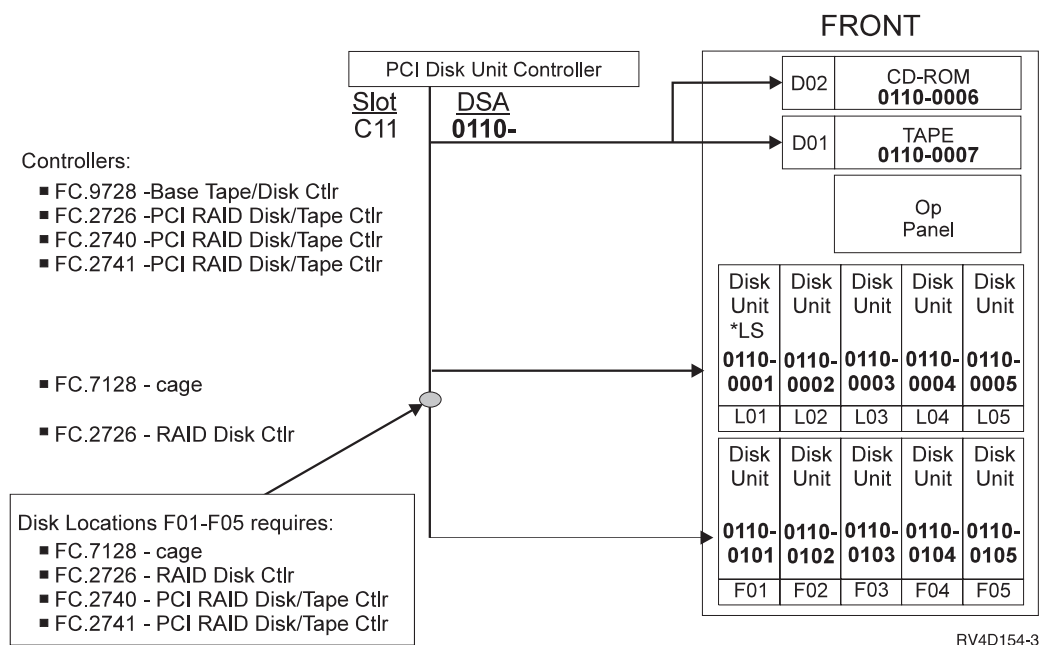


Figure 38. Model S10 Disk/Tape Addressing

### Model S10 - Processor and Main Storage Features:

Table 21. Model S10 Processor and Main Storage Features

Description	FC 2118	FC 2119
Number of Processors	1	1
Number of Base 64MB (FC 3110) SIMM pairs	1	2
Memory Organization	SIMM Pairs <sup>1</sup>	SIMM Quads <sup>2</sup>
SIMM feature types <sup>3</sup>	3182, 3110	3182, 3110
Min. Main Storage (MB)	64	128
Max. Main Storage (MB)	384	512
Number of SIMMs Min / Max	2/12	4/16
Notes: 1. FC 3110 is 64MB; made up by a pair of 32MB SIMMs. 2. Memory features must be installed in pairs on the 2136; this requires 4 SIMM modules. 3. FC 3172 is equivalent to FC 3182.		

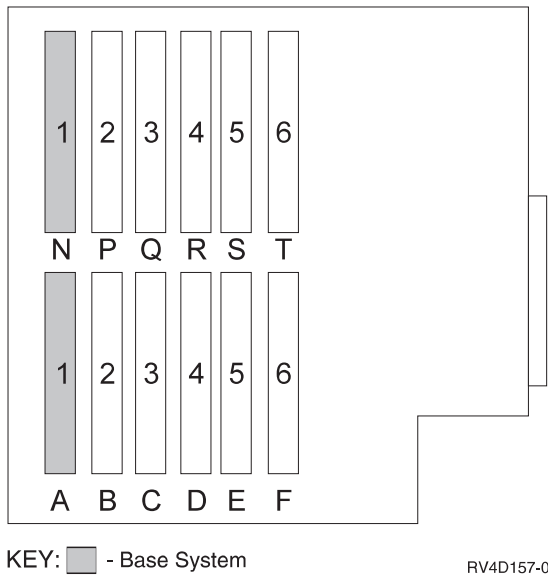
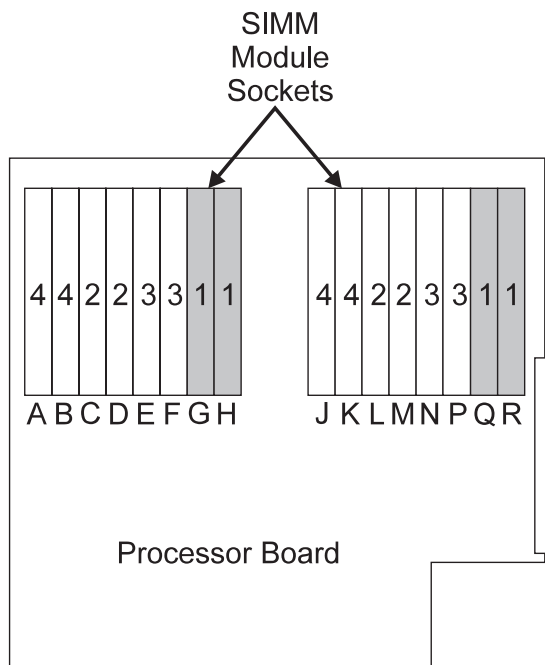


Figure 39. Model S10 - FC 2118



#### **SIMM Install Sequence**

- 1) Base: G and H with Q and R
- 2) C and D with L and M
- 3) E and F with N and P
- 4) A and B with J and K

KEY: - Base System

RV4D158-0

Figure 40. Model S10 - FC 2119 Mainstore

### Model S10 — Base System Features:

Table 22. Model S10 —Base System Features

Base Feature	Location	Features
Load Source disk	L01	<ul style="list-style-type: none"><li>• 9707 (4.19GB; CCIN 6607)</li><li>• 8813 (8.58GB; CCIN 6713)</li><li>• 8824 (17.54GB; CCIN 6714)</li></ul>
Base Disk / Tape Ctrl	C11	<ul style="list-style-type: none"><li>• 9728</li></ul>
Twinax Console	C09	<ul style="list-style-type: none"><li>• 9720 (Twinax/ECS)</li></ul>
Client Access Comm Console	C09	<ul style="list-style-type: none"><li>• 9721 (2 port comm)</li></ul>
ECS	C09	<ul style="list-style-type: none"><li>• 9720</li><li>• 9721</li></ul>
Base LAN IOA	C08	<ul style="list-style-type: none"><li>• 9723 (Ethernet)</li><li>• 9724 (Token Ring)</li></ul>
Base LAN IOA (High Speed)	C01	<ul style="list-style-type: none"><li>• 9738 (100/10 Ethernet)</li></ul>

### Model S10 - System Power and Battery Features:

Table 23. Model S10 Power and Battery Features

Feature	Description	Details
Base	Base power	<ul style="list-style-type: none"><li>• No SPCN</li><li>• 480 watt power supply</li></ul>

### Model S10 - Internal Expansion Features:

Table 24. Model S10 Internal Expansion Features

Feature	Description	Details
7128	Disk unit cage	<ul style="list-style-type: none"><li>• Supports 5 disk units.</li><li>• Supports concurrent maintenance.</li></ul>

### Model S10 Summary:

Table 25. Model S10 Summary

Description/Function	FC 2118	FC 2119
DASD Storage (MB)		
Integrated Min	4.194	4.194
Integrated Max	175.4	175.4
Total Maximum	175.4	175.4
Diskette (Max/Sys)	0	0
Int Tape and CDROM Attach (Max/Sys)		
1/4" and/or 8mm Cart, CDROM <sup>1</sup>	2	2

Table 25. Model S10 Summary (continued)

Description/Function	FC 2118	FC 2119
Ext Tape (Max/Sys)	1	1
8mm Cart - 7208	• 1	• 1
1/2" Reel - 9348	• 1	• 1
1/2" Reel - 2440, 9347	• 0	• 0
1/2" Cart/Reel - 34xx, 35xx	• 1	• 1
Tape Libraries-Max <sup>2</sup>		
1/2" Cart	1	1
8mm	1	1
Optical Libraries		
3995	1	1
Physical Packaging		
System I/O Card Slots-SPD	0	0
System I/O Card Slots-PCI	8	8
Workstation Attach-Max <sup>3</sup>		
• TWINAX Controllers	1	1
• TWINAX Devices	28	28
• ASCII Controllers	0	0
• ASCII Devices	0	0
Communications Lines-Max	8 (note5)	8 (note5)
FAX IOP-Max	0	0
LAN Ports Max	3	3
Integrated Netfinity Server (Integrated PC Server) ports Max <sup>4</sup>	• 1 • 3	• 1 • 3
non-Integrated Netfinity Server LAN ports Max		
<b>Notes:</b> 1. These are internal tape or CDROM drives. Maximum of 1 integrated CDROM drive. 2. Maximum of 4 tape drives, may be any combination of 7208, 2440, or 9348 drives. 3. 94xx Models support any combination of TWINAX or ASCII workstation controllers up to either maximum shown (max not additive). 4. FSIOA may have one or two ports. 5. One line is used for Client Access Console.		

Model 620

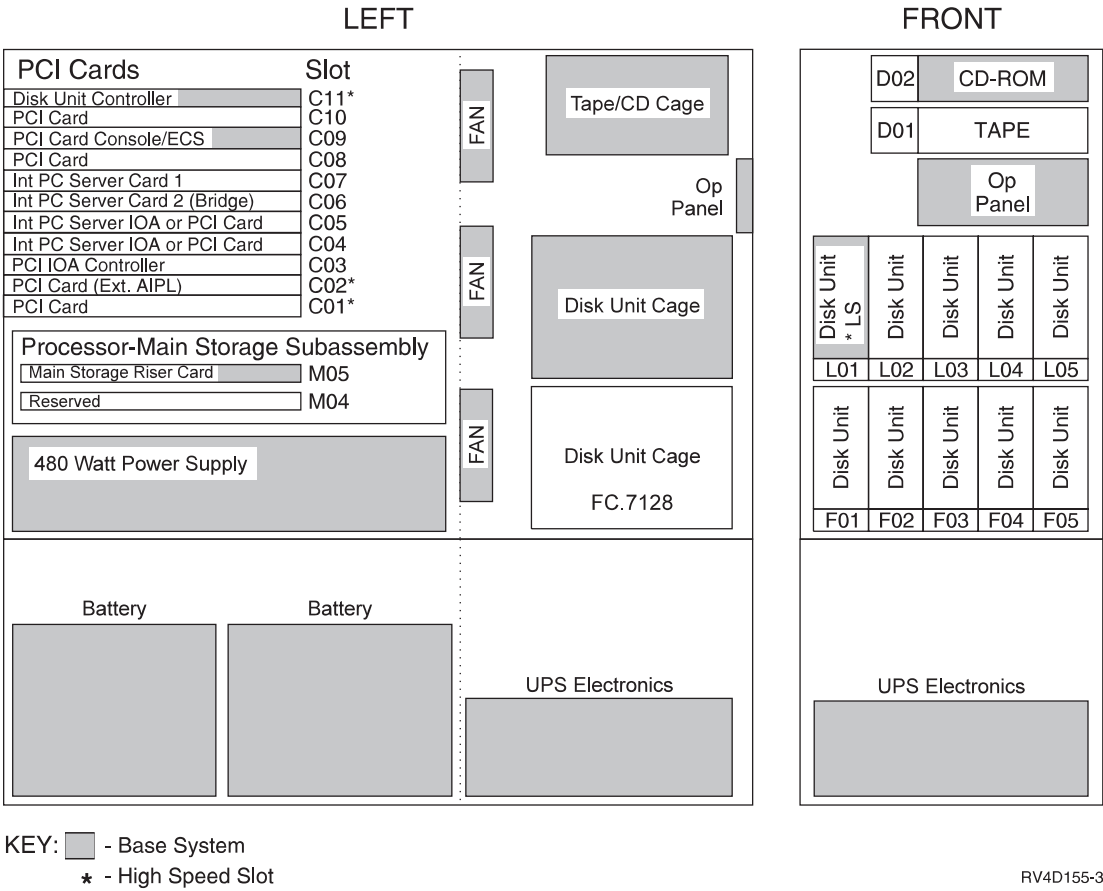
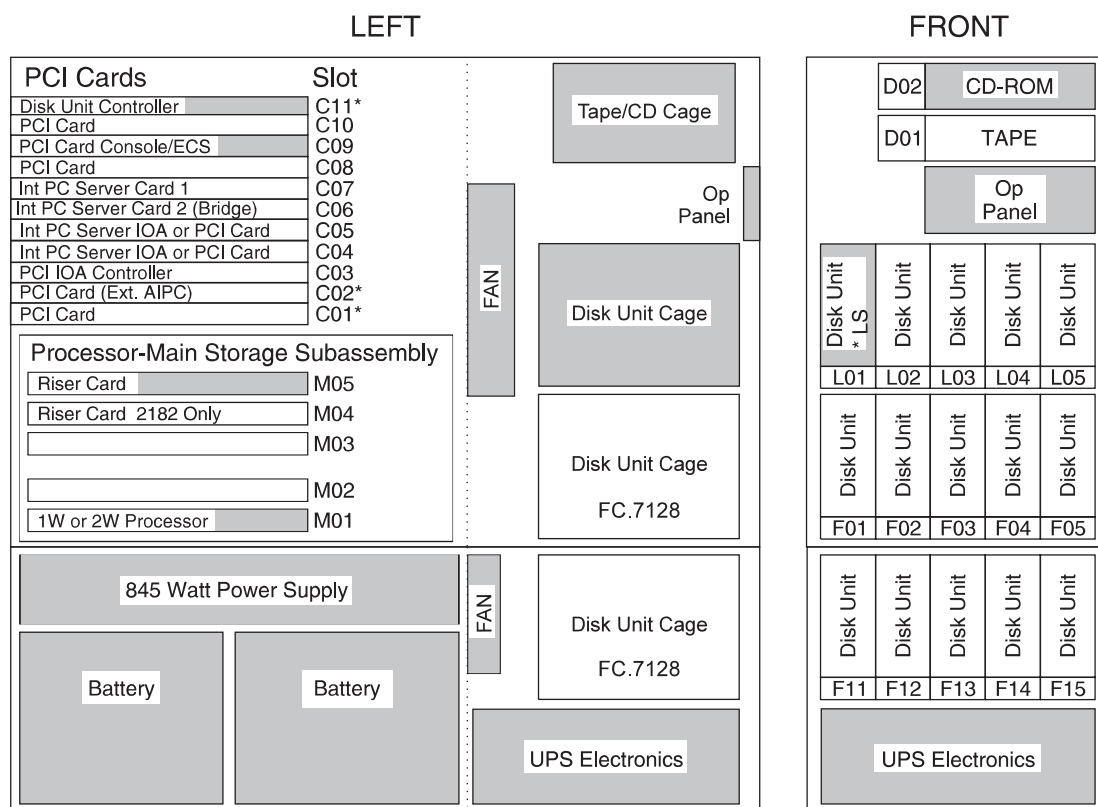


Figure 41. Model 620 - FC 2175/ FC 2179/ FC 2180



KEY:  - Base System  
 \* - High Speed Slot

RV4D156-3

Figure 42. Model 620 - FC 2181/ FC 2182

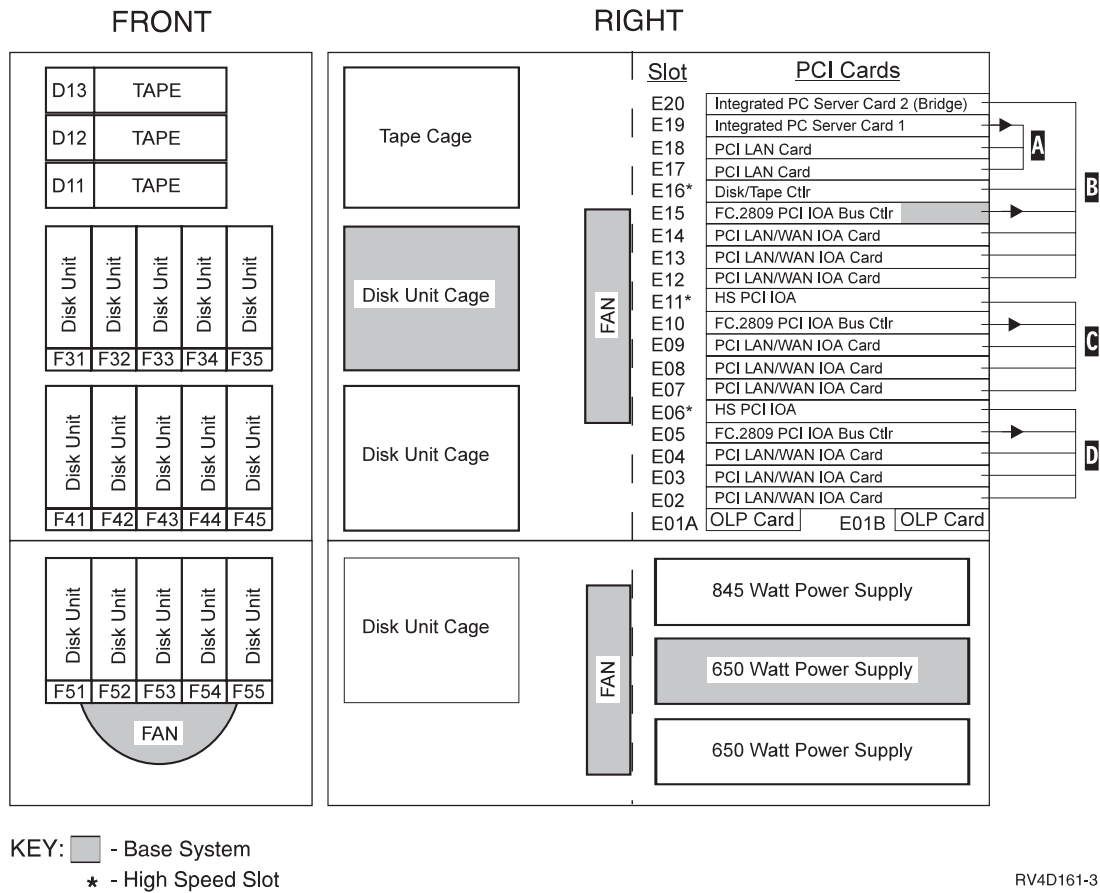
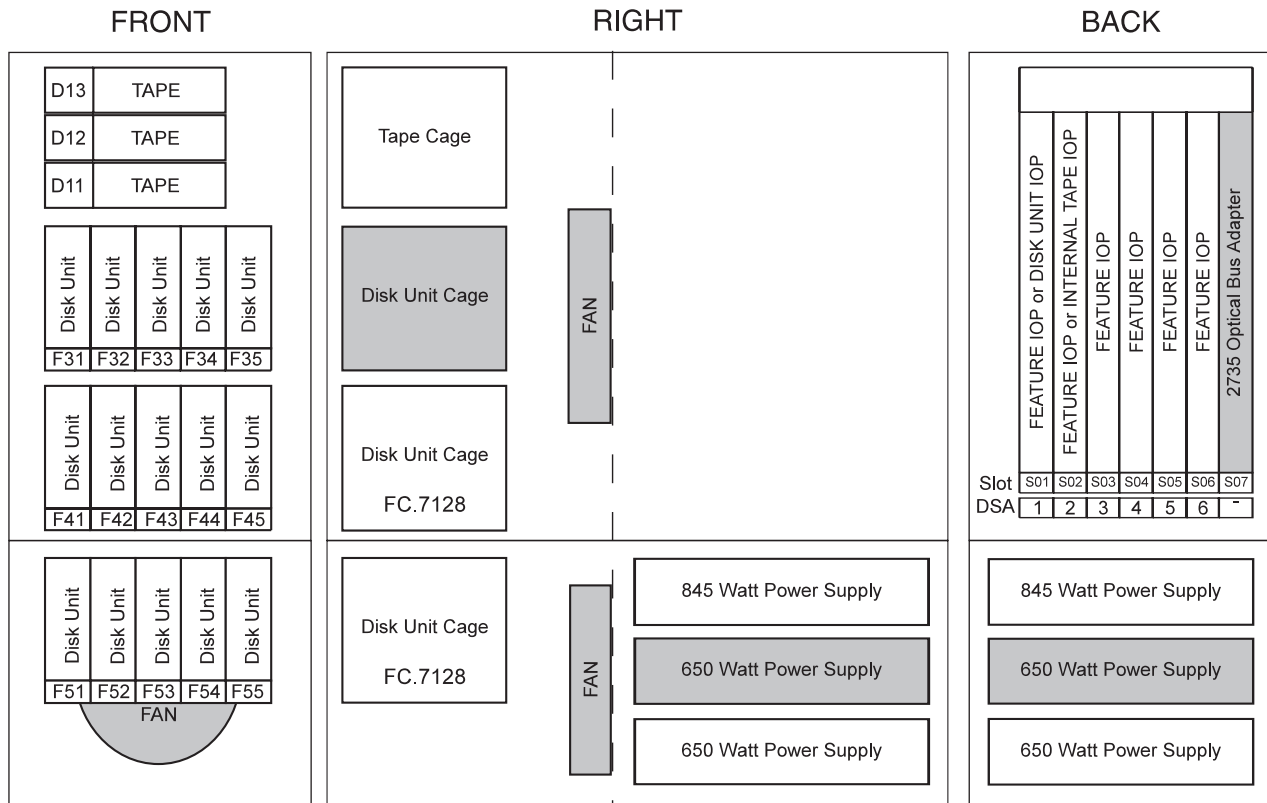


Figure 43. PCI System Unit Expansion (FC 9364 with FC 7129)

**Note:**

- **A** E19 controls E18, E17
- **B** E15 controls E12, E13, E14, E16, E20
- **C** E10 controls E11, E07, E08, E09
- **D** E05 controls E06, E02, E03, E04



KEY:  - Base System

RV4D151-0

Figure 44. SPD System Unit Expansion (FC 9364 with FC 7131)

### Model 620 - Processor and Main storage Features:

Table 26. Model 620 Processor and Main Storage Feature Attributes

Processor Feature Attribute	FC 2175, FC 2179	FC 2180	FC 2181	FC 2182
Number of Processors	1	1	1	2
Min. Base main storage	256MB <sup>1</sup>	256MB	256MB	256MB
Max. main storage	2048MB	2048MB	2048MB	4096MB
FC 3001 32MB DIMM - (Additional DIMMs Supported )	14	14	14	30
FC 3002 128MB DIMM - (Additional DIMMs Supported)	14	14	14	30
Memory Organization	DIMM Pairs	DIMM Pairs	DIMM Pairs	DIMM Pairs
Clock card (CCIN)	2834	2834	2833	2833
<b>Notes:</b> 1. FC 2175 base main storage is 64MB (specify code 0004).				

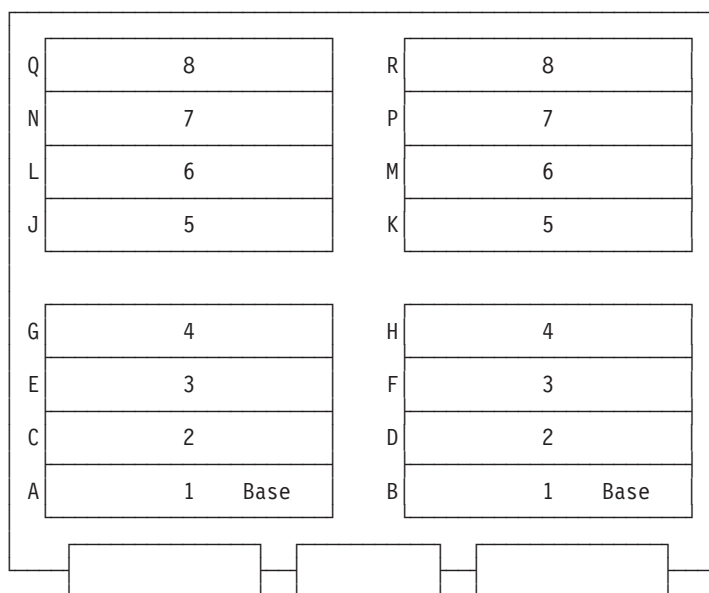


Figure 45. Model 620 main storage riser card. Processors: FC 2175, FC 2179, FC 2180, FC 2181, and FC 2182

### Model 620 — Base System Features:

Table 27. Model 620 —Base System Features

Base Feature	Location	Features
Load Source disk	L01	<ul style="list-style-type: none"> <li>9707 (4.19GB; CCIN 6607)</li> <li>8813 (8.58GB; CCIN 6713)</li> <li>8824 (17.54GB; CCIN 6714)</li> </ul>
PCI Disk Controller	C11	<ul style="list-style-type: none"> <li>9728 (5 disks, 1 tape, 1 CD)</li> </ul>
System Unit Expansion	right half of frame	<ul style="list-style-type: none"> <li>9364</li> </ul>
Twinax Console	C09	<ul style="list-style-type: none"> <li>9720 (Twinax/ECS)</li> </ul>
Client Access Comm Console	C09	<ul style="list-style-type: none"> <li>9721 (2 port Comm)</li> </ul>
ECS	C09	<ul style="list-style-type: none"> <li>9720</li> <li>9721</li> </ul>

### Model 620 - System Power and Battery Features:

Table 28. Model 620 Power and Battery

Power Feature	Description	Details
Base 1	Base Power FC 2179 and FC 2180	<ul style="list-style-type: none"> <li>SPCN support</li> <li>480 watt base power supply</li> <li>Continuously Powered Memory (CPM)</li> </ul>
Base 2	Base Power FC 2181 and FC 2182	<ul style="list-style-type: none"> <li>SPCN support</li> <li>845 watt base power</li> <li>Continuously Powered Memory (CPM)</li> </ul>

Table 28. Model 620 Power and Battery (continued)

Power Feature	Description	Details
5153	Redundant Power	<b>FC 2181 and FC 2182 Processors</b> <ul style="list-style-type: none"> <li>2 Power Supplies: <ul style="list-style-type: none"> <li>845 Watt Power Supply</li> <li>650 Watt Power Supply</li> </ul> </li> <li>Installs in FC 9364 Expansion Unit</li> </ul>
<b>Note:</b>  Refer to Figure 41, Figure 42, and Figure 43 for location information.		

### Model 620 - Internal Expansion Features:

Table 29. Model 620 Internal Expansion Features

Expansion Features	Description	Details
9364	System Unit Expansion (part of the base system)	Expands system unit capacity (with FC 7129 or FC 7131)
7131	Book-style (SPD) card cage	<ul style="list-style-type: none"> <li>6 book slots</li> <li>Enables external bus expansion</li> </ul>
7129	PCI-style card cage	<ul style="list-style-type: none"> <li>14 PCI IOA slots</li> <li>3 PCI Controller positions plus one Integrated Netfinity Server Support position</li> <li>Enables External Bus Expansion</li> </ul>
7128	DASD expansion cage	<ul style="list-style-type: none"> <li>5 disk unit slots</li> <li>Concurrent maintenance support</li> </ul>
7130	Removable media cage	Allows FC 9364 expansion to support 3 removable-media (tape) units

### Model 620 — Feature Install Restrictions:

- FC 2624 not allowed in Slot S01 of SPD expansion (FC 7131).
- FC 2624 not allowed to control internal tape devices of System Expansion Unit FC 9364, therefore can only be used in Slot S02 when no internal tape units are present and controlling external diskette.

### Model 620 Summary:

Table 30. Model 620 Summary

Description/ Function	FC 2175	FC 2179, FC 2180	FC 2181	FC 2182
Main Storage (MB)				
Main Storage Min/Max	64/1856MB <sup>1</sup>	256/2048MB	256/2048MB	256/4096MB
Number of DIMM Modules	2-16	2-16	2-16	2-32
Disk Unit Capacity (GB)				
Base	4.19	4.19	4.19	4.19

Table 30. Model 620 Summary (continued)

Description/ Function	FC 2175	FC 2179, FC 2180	FC 2181	FC 2182
Maximum Internal DASD	175.4	175.4	263.2	263.2
Maximum External DASD	893.3	893.3	893.3	893.3
Total System DASD	944.8	944.8	944.8	944.8
Diskette				
Diskette (8 or 5.25 inch)	0-2	0-2	0-2	0-2
Tape Attachment (1 required)				
1/4" and/or 8mm Cart, CDROM <sup>2</sup>	0-18	0-18	0-18	0-18
8mm Cartridge, 9427 <sup>3</sup>	0-4	0-4	0-4	0-4
1/2" Reel 2440, 9348 <sup>3</sup>	0-4	0-4	0-4	0-4
3490, 3590, 3570	0-4	0-4	0-4	0-4
9347	0-2	0-2	0-2	0-2
Tape Library Units	0-4	0-4	0-4	0-4
Physical Packaging				
SPD I/O Bus	0-4	0-4	0-4	0-4
I/O Card Slots - SPD	0-58	0-58	0-58	0-58
I/O Card Slots - PCI	8-22	8-22	8-22	8-22
Expansion Towers (FC 507x/508x)	0-4	0-4	0-4	0-4
Workstation Attachment				
Controllers Min/Max	1-60	1-60	1-60	1-60
Twinax Devices (max)	2392	2392	2392	2392
ASCII Devices (max)	1044	1044	1044	1044
Communication Lines				
Communication Lines - Min/Max	1-96	1-96	1-96	1-96
FAX IOPs (2 lines/IOP)	0-32	0-32	0-32	0-32
Cryptographic IOP	1	1	1	1
LAN Adapters	0-16	0-16	0-16	0-16
Optical Libraries	0-14	0-14	0-14	0-14
<b>Notes:</b> 1. With specify code 0004. Without specify code 0004, max is 2048MB. 2. This is the combined quantity of internal tapes. 3. Maximum of 4 tape drives and libraries; may be any combination of 2440, 7208 or 9348s. Each 9427 is counted as either 1 or 2 7208s.				

# Model 720

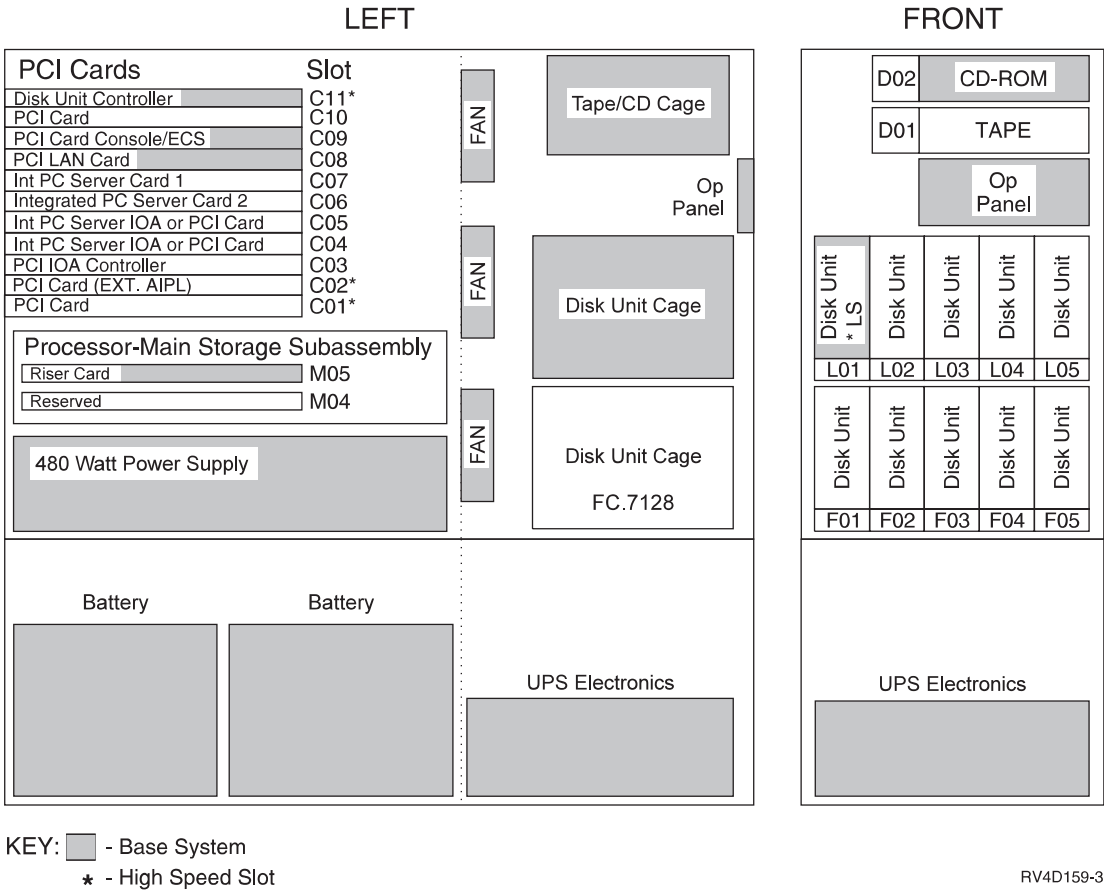
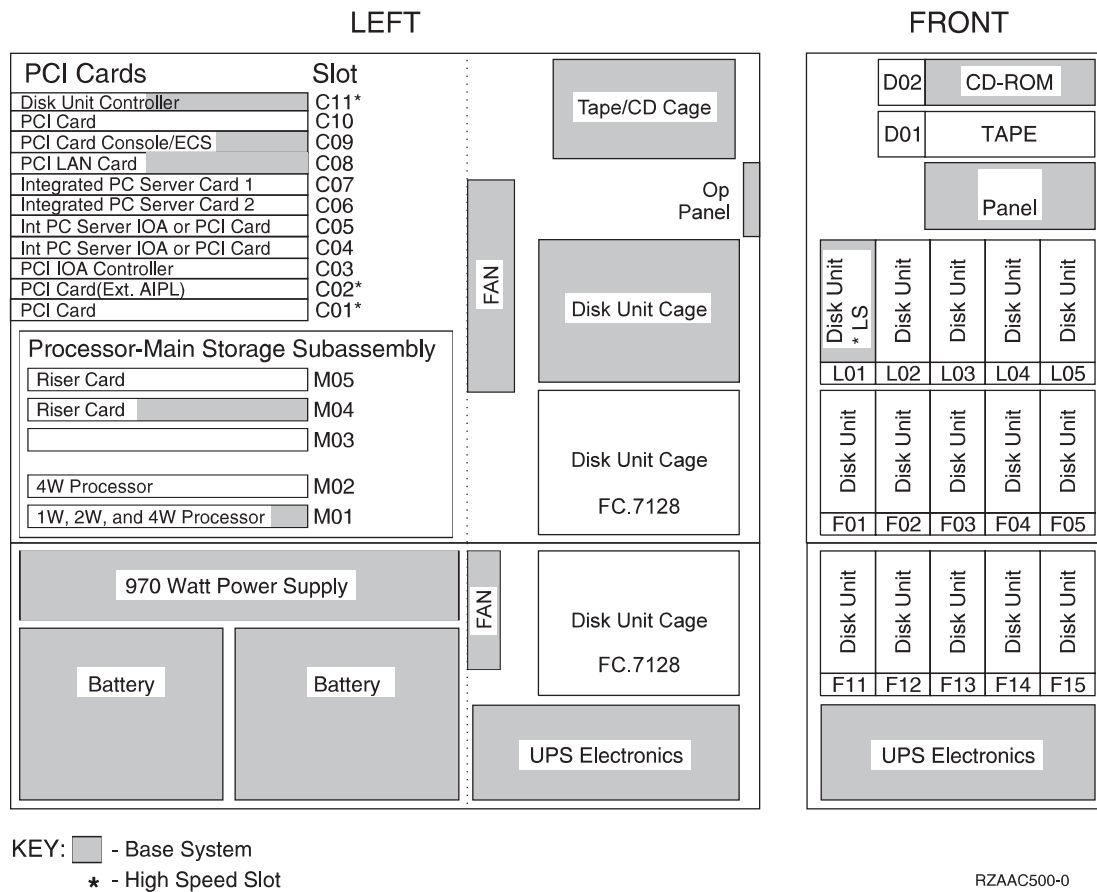


Figure 46. Model 720 - FC 2061 Processor CEC

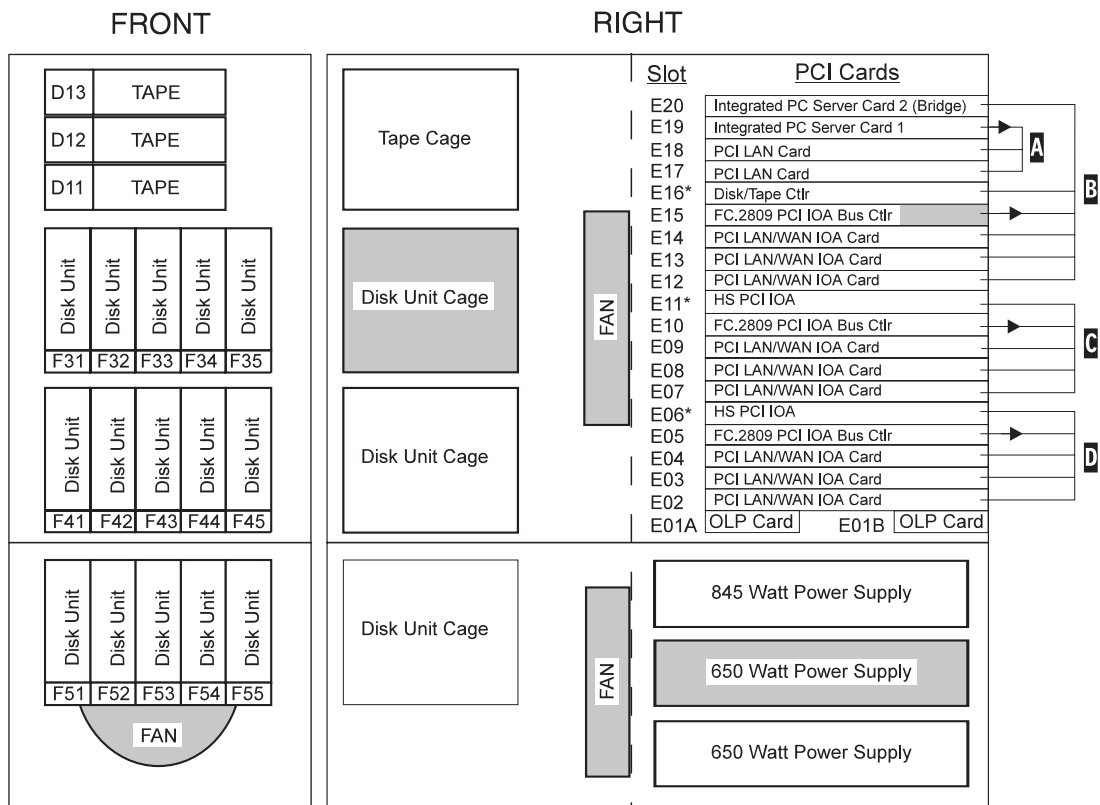


KEY:  - Base System

      \* - High Speed Slot

RZAAC500-0

Figure 47. Model 720 - FC 2062, FC 2063, FC 2064 Processor CECs



KEY:  - Base System  
 \* - High Speed Slot

RV4D161-3

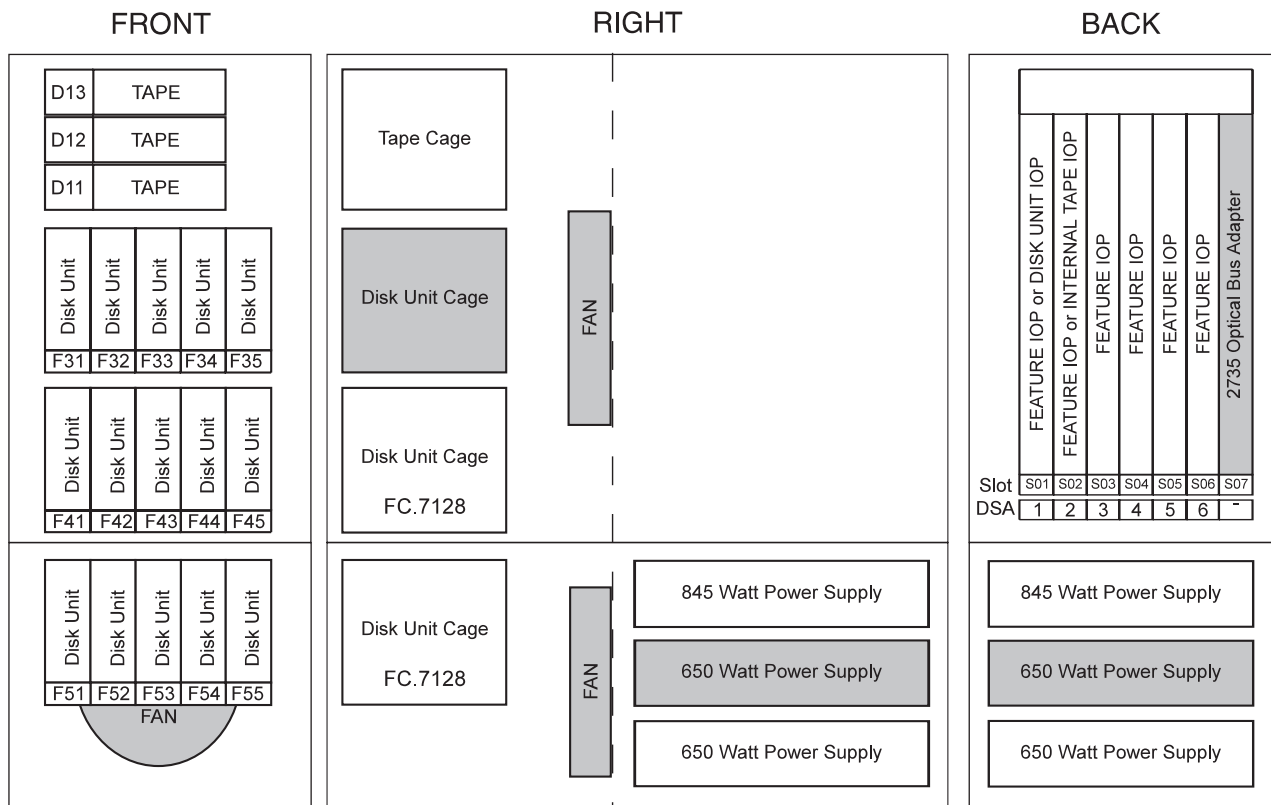
Figure 48. 720 PCI System Unit Expansion (FC 5064 with FC 7129)

**Note:**

- **A** E19 controls E18, E17
- **B** E15 controls E12, E13, E14, E16, E20
- **C** E10 controls E11, E07, E08, E09
- **D** E05 controls E06, E02, E03, E04



Appendix C. Configuration Rules for AS/400 Models 170/250/6xx/SB1/7xx 225



KEY: - Base System

RV4D151-0

Figure 50. SPD System Unit Expansion (FC 5064 with FC 7131)

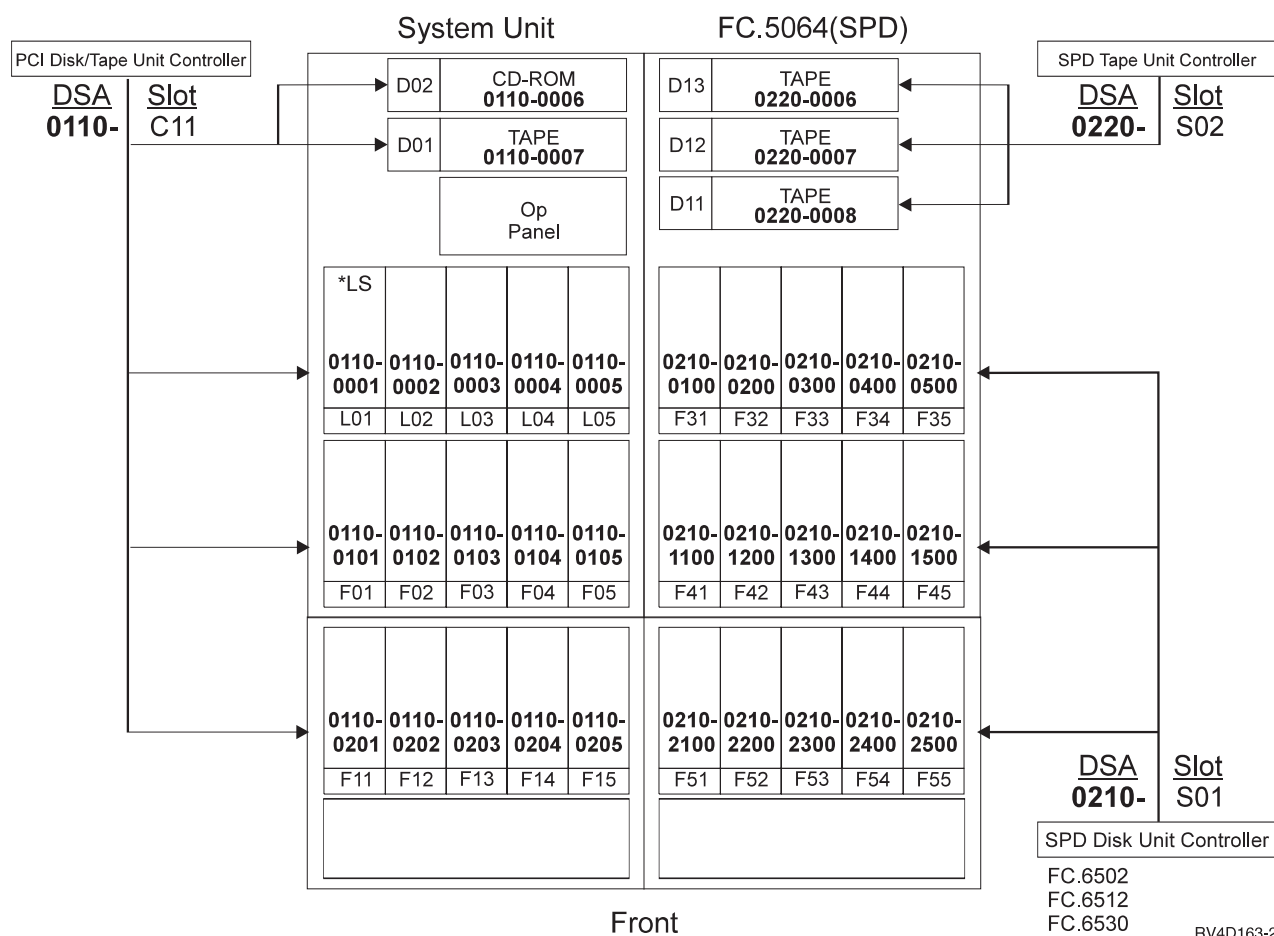


Figure 51. Disk Addressing in SPD FC 5064 Expansion

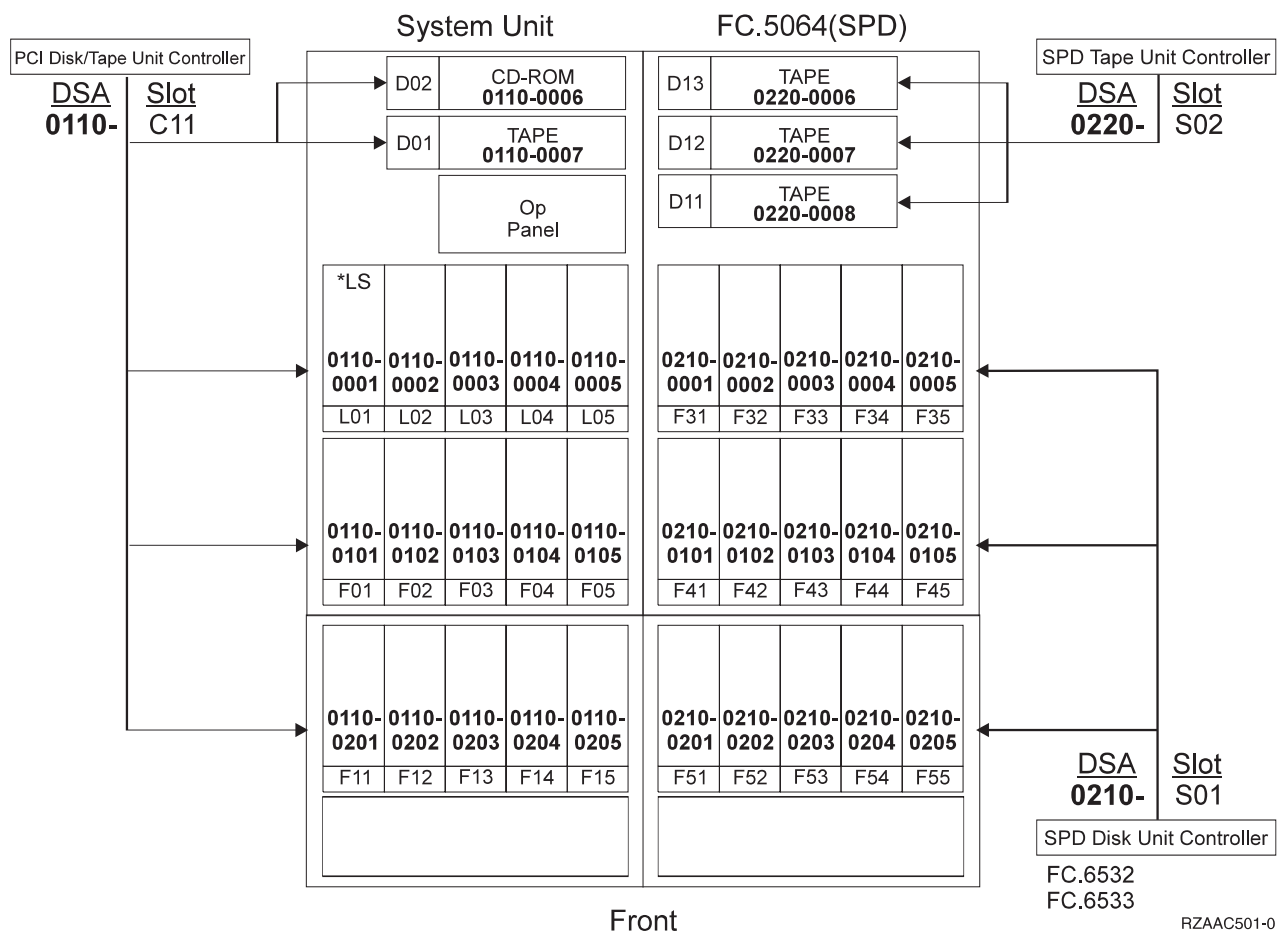
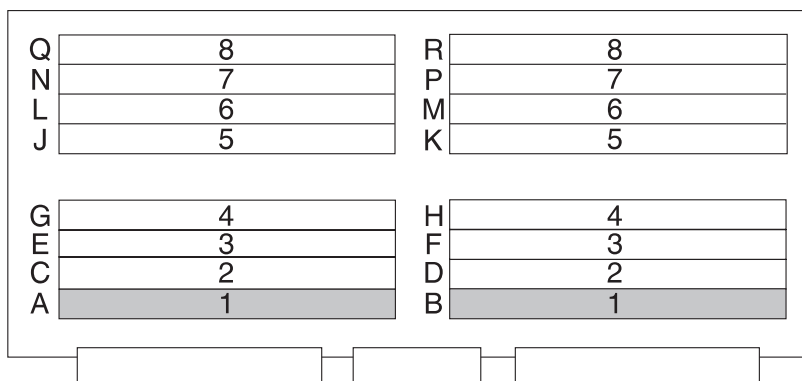


Figure 52. Disk Addressing in SPD FC 5064 Expansion with FC 6532/6533 Controller



RZAAC502-0

Figure 53. Model 720 main storage riser card.

## Model 720 - Processor and Main Storage Features:

Table 31. Model 720 Processor and Main Storage Features

Description	FC 2061	FC 2062	FC 2063	FC 2064
Number of Processors	1	1	2	4
Base Main Storage	256MB	256MB	256MB	256 MB
Max Main Storage	2048MB	2048MB	4096MB	8192MB
Number of DIMM Positions	16	16	32	32
Memory Organization	DIMM Pairs	DIMM Pairs	DIMM Pairs	DIMM Pairs
Clock Card (CCIN)	2834	2833	2833	2833

Table 32. Model 720 — Processor Locations

Feature	Location M01	Location M02
FC 2061	243A	None
FC 2062	242C	None
FC 2063	242D	None
FC 2064	242A	242B

## Model 720 — Base System Features:

Table 33. Model 720 —Base System Features

Base Feature	Location	Features
Load Source disk	L01	<ul style="list-style-type: none"><li>• 9707 (4.19GB - 6607)</li><li>• 8813 (8.58GB - 6713)</li><li>• 8817 (8.58GB - 6817)</li><li>• 8824 (17.5GB - 6714)</li></ul>
PCI Disk/Tape Controller	C11	<ul style="list-style-type: none"><li>• 9728 (5 disks, 1 tape, 1 CD)</li></ul>
Twinax Console	C09	<ul style="list-style-type: none"><li>• 9720 (Twinax/ECS - 2720)</li></ul>
Client Access Comm Console	C09	<ul style="list-style-type: none"><li>• 9721 (2 port Comm - 2721) requires FC 0362</li></ul>
Operations Console	C09	<ul style="list-style-type: none"><li>• 9721 (2 port Comm - 2721) requires FC 0367</li></ul>
ECS	C09	<ul style="list-style-type: none"><li>• 9720</li><li>• 9721</li></ul>
Base LAN	C08	<ul style="list-style-type: none"><li>• 9723 (Ethernet - 2723)</li><li>• 9724 (Token ring - 2724)</li></ul>
Base LAN	C01	<ul style="list-style-type: none"><li>• 9738 (10/100 Ethernet - 2838)</li></ul>

### Model 720 - Power and Battery Features:

Table 34. Model 720 Power and Battery

Power Feature	Description	Details
Base 1	Base Power FC 2161	<ul style="list-style-type: none"><li>• SPCN Support</li><li>• Continuously Powered Memory (CPM)</li></ul>
Base 2	Base Power FC 2163, FC 2165, FC 2166, FC 2170, FC 2177, FC 2178	<ul style="list-style-type: none"><li>• SPCN Support</li><li>• Continuously Powered Memory (CPM)</li></ul>
5153	Redundant Power	<ul style="list-style-type: none"><li>• 2 Power supplies<ul style="list-style-type: none"><li>– 970 watt</li><li>– 700 watt</li></ul></li><li>• Installs in FC 5064 Expansion Unit pedestal</li></ul>

### Model 720 - Internal Expansion Features:

Table 35. Model 720 Internal Expansion Features

Expansion Features	Description	Details
5064	System Unit Expansion	Expands system unit capacity (with FC 7129 or FC 7131)
7131	Book-style (SPD) card cage	<ul style="list-style-type: none"><li>• 6 book slots</li><li>• Enables external bus expansion</li></ul>
7129	PCI-style card cage	<ul style="list-style-type: none"><li>• 14 PCI IOA slots</li><li>• 3 PCI Controller positions plus one Integrated Netfinity Server Support position</li><li>• Enables External Bus Expansion</li></ul>
7128	DASD expansion cage	<ul style="list-style-type: none"><li>• 5 disk unit slots</li><li>• Concurrent maintenance support</li></ul>
7130	Removable media cage	Allows FC 5064 expansion to support 3 removable-media (tape) units

### Model 720 — Feature Install Restrictions:

- FC 2624 not allowed in Slot S01 of SPD expansion (FC 7131).
- FC 2624 not allowed to control internal tape devices of System Expansion Unit FC 5064, therefore can only be used in Slot S02 when no internal tape units are present and to control external diskette.

### Model 720 Summary:

Table 36. Model 720 Summary

Description/ Function	FC 2061, FC 2062	FC 2063, FC 2064
Main Storage		
Maximum DIMMs (MB)	2048	4096
DASD Storage (GB)		
Integrated Max DASD	1288	1288

Table 36. Model 720 Summary (continued)

Description/ Function	FC 2061, FC 2062	FC 2063, FC 2064
External Max DASD	1236	1236
Total Maximum	1288	1288
Diskette		
Diskette (Max/Sys)	2	2
Int Tape and CDROM Attach (Max/Sys)		
1/4" and/or 8mm Cart, CDROM (3)	18	18
Ext Tape (maximums)		
Ext Tape (Max/Sys)	4	4
8mm Cart - 7208 (4)	4	4
1/2" Reel - 9348 (4)	4	4
1/2" Reel - 2440 (4)	4	4
1/2" Reel - 9347	2	2
1/2" Cart/Reel - 34xx, 35xx	4	4
Optical Libraries		
Optical Libraries - Max	14	14
Physical Packaging		
Ext SPD I/O Bus - Optical	0-4	0-4
I/O Card Slots - SPD	0-58	0-58
I/O Card Slots - PCI	8-22	8-22
Workstation Attach - Maximums		
Twinax Controllers	66	66
Twinax Devices	2628	2628
ASCII Controllers	58	58
Max ASCII Devices	28	28
Communication Lines - Max	128	128
Cryptographic IOP - Max	1	1
Fax IOP-Max	32	32
Lan Ports		
LAN Ports Max	16	16
Wireless Lan IOP - Max	3	3
Integrated Netfinity Server (SPD) Max	16	16
Integrated Netfinity Server (PCI) Max	2	2
PCI LAN - Max	8	8
<b>Notes:</b> 1. PCI and SPD system unit expansion features are mutually exclusive. 2. These are internal tape or CDROM drives. Maximum of 1 integrated CDROM drive. 3. Total number of tape drives does not increase.		

# Model S20

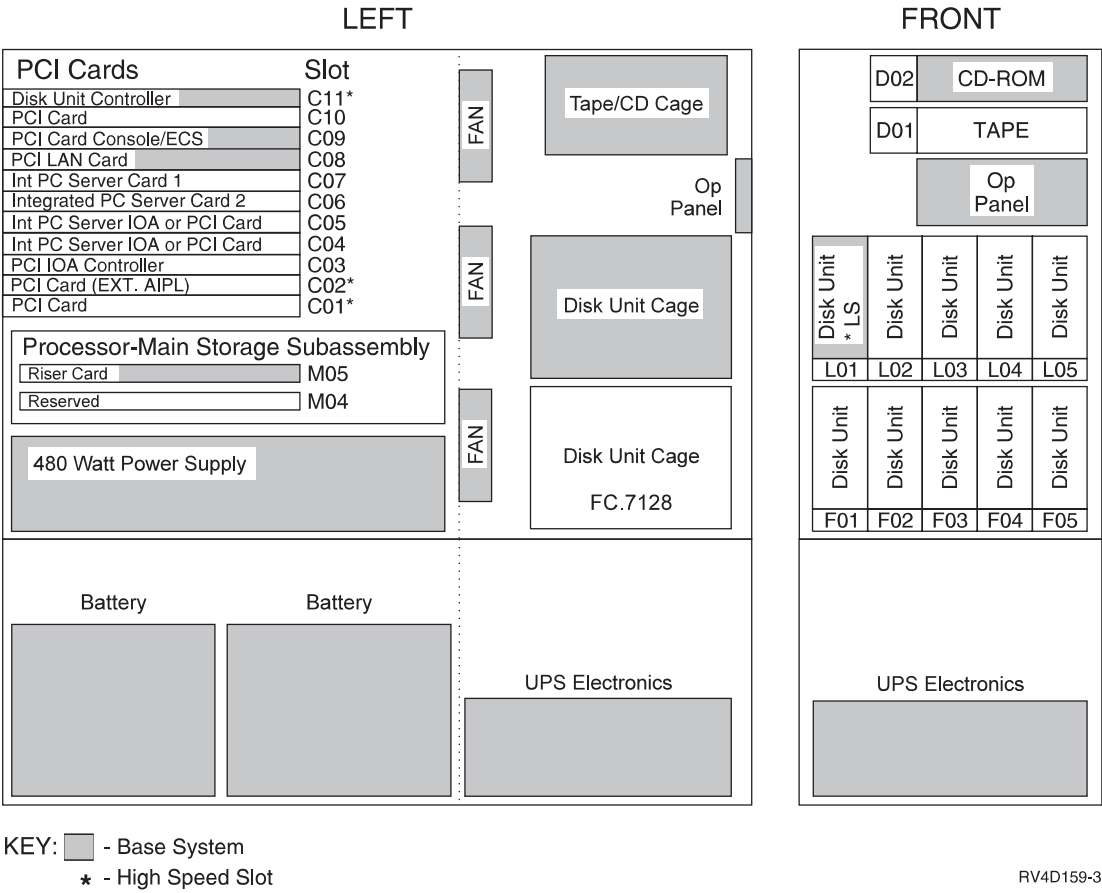


Figure 54. Model S20 - FC 2161 Processor CEC

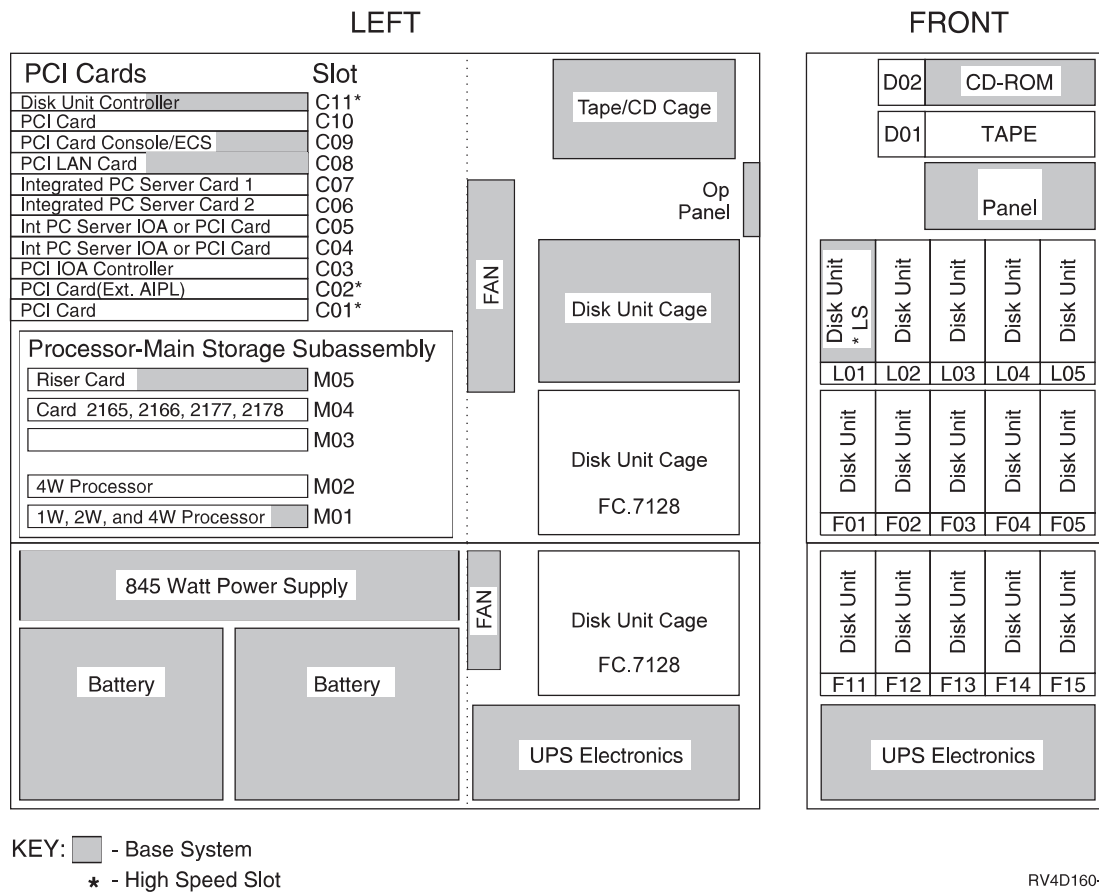
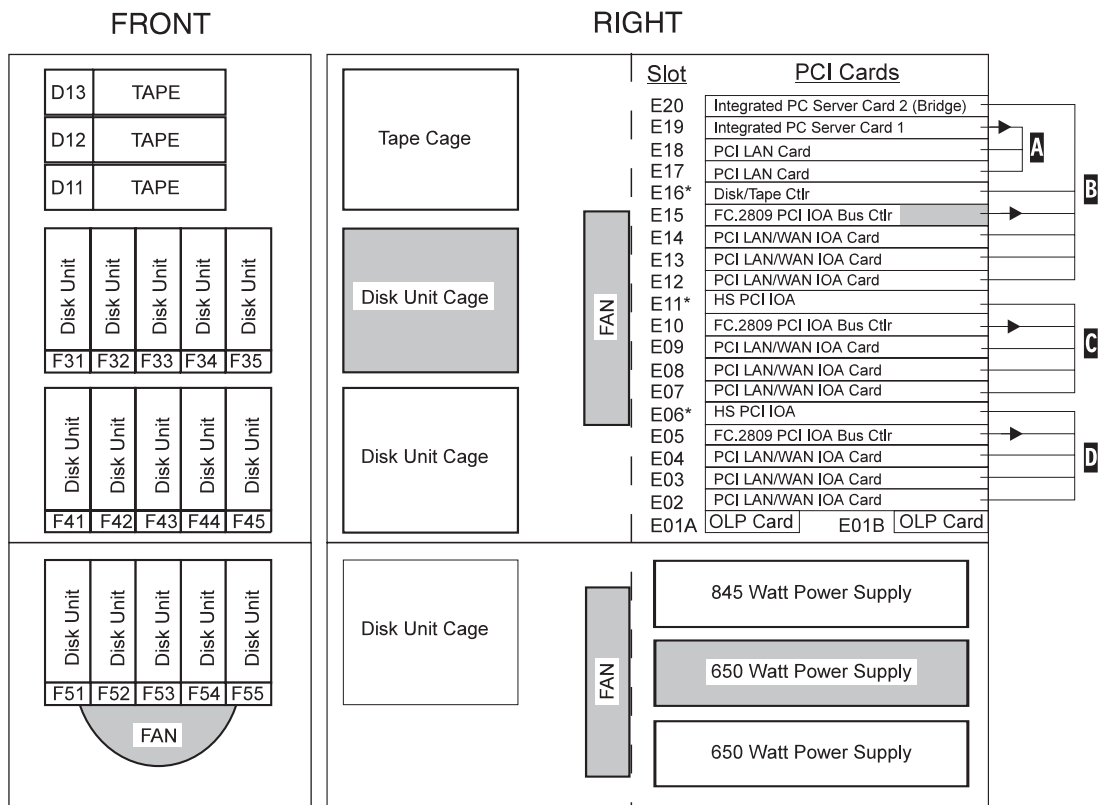


Figure 55. Model S20 - FC 2163/ FC 2165/ FC 2166/ FC 2170/ FC 2177/ FC 2178 Processor CECs



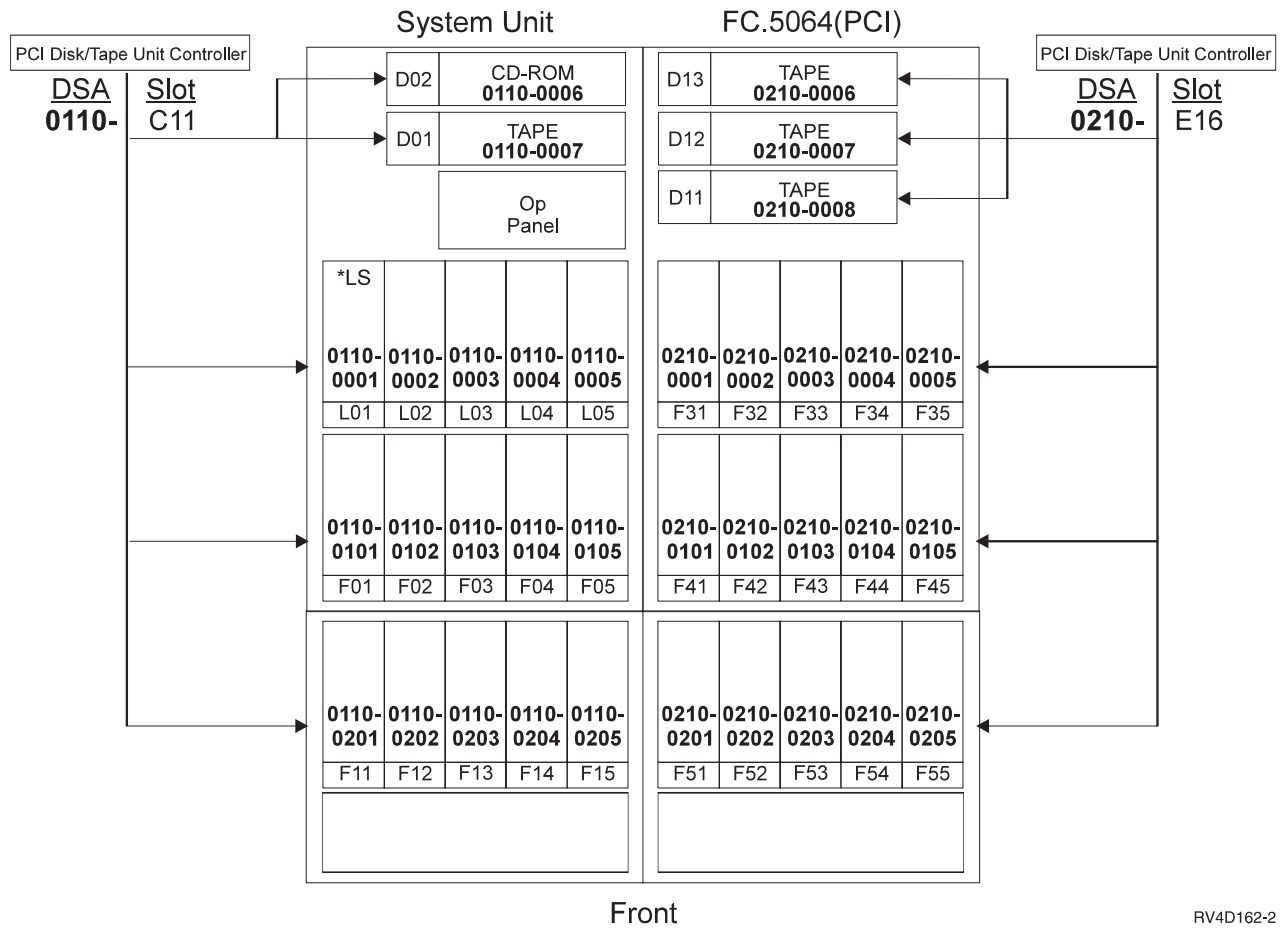
KEY:  - Base System  
 \* - High Speed Slot

RV4D161-3

Figure 56. PCI System Unit Expansion (FC 9364 or FC 5064 with FC 7129)

**Note:**

- **A** E19 controls E18, E17
- **B** E15 controls E12, E13, E14, E16, E20
- **C** E10 controls E11, E07, E08, E09
- **D** E05 controls E06, E02, E03, E04



RV4D162-2

Figure 57. Disk Addressing in PCI FC 5064 Expansion

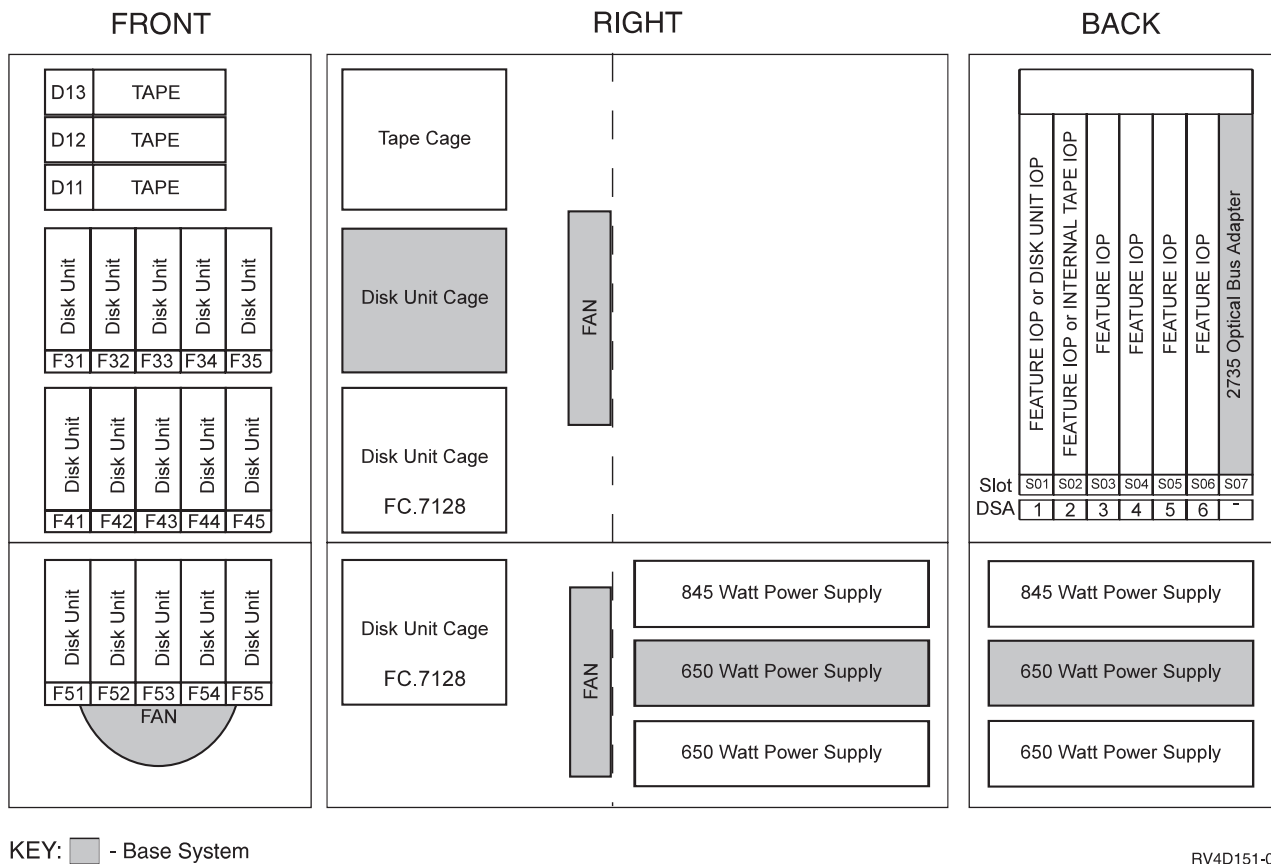


Figure 58. SPD System Unit Expansion (FC 5064 with FC 7131)

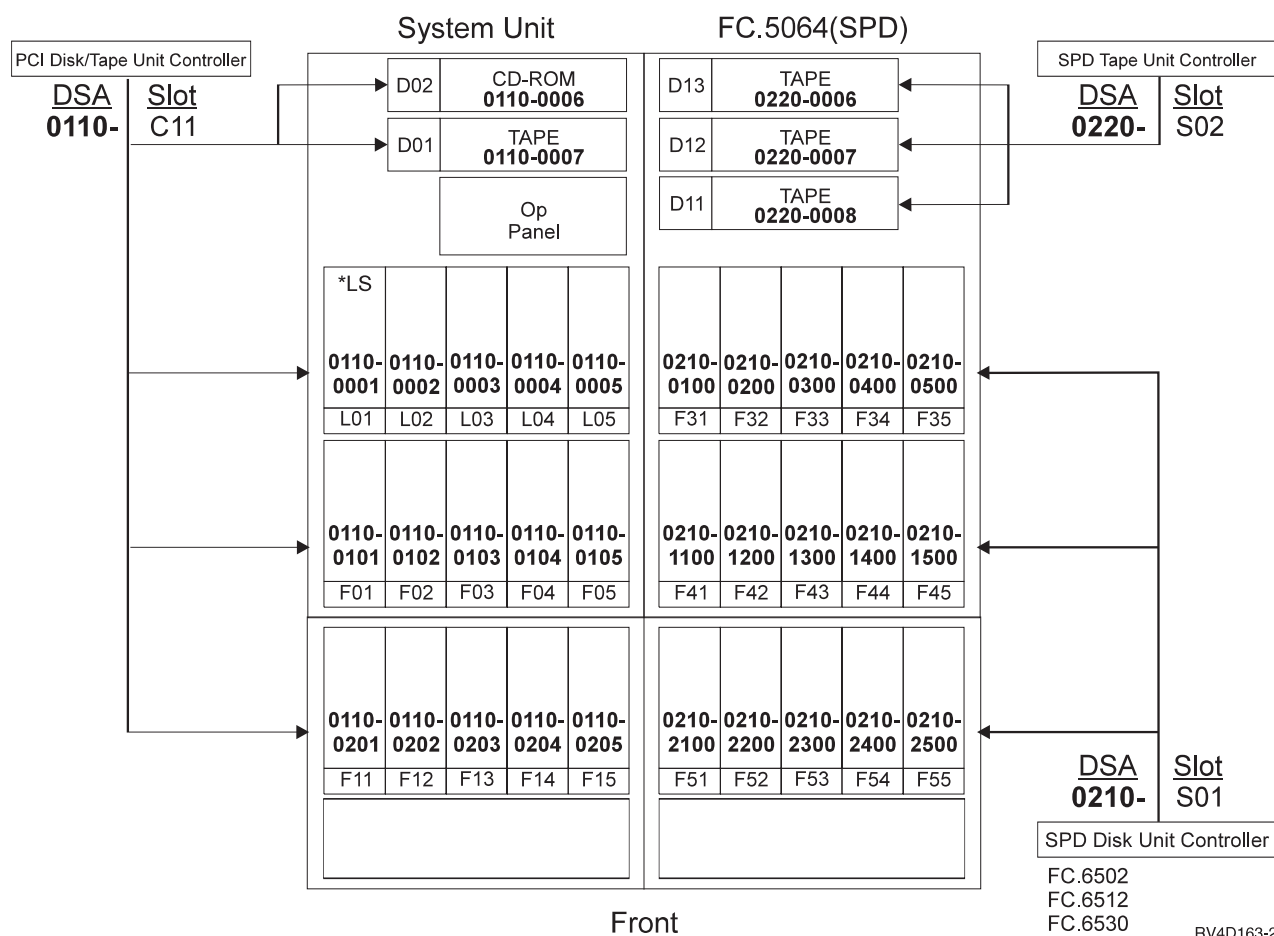
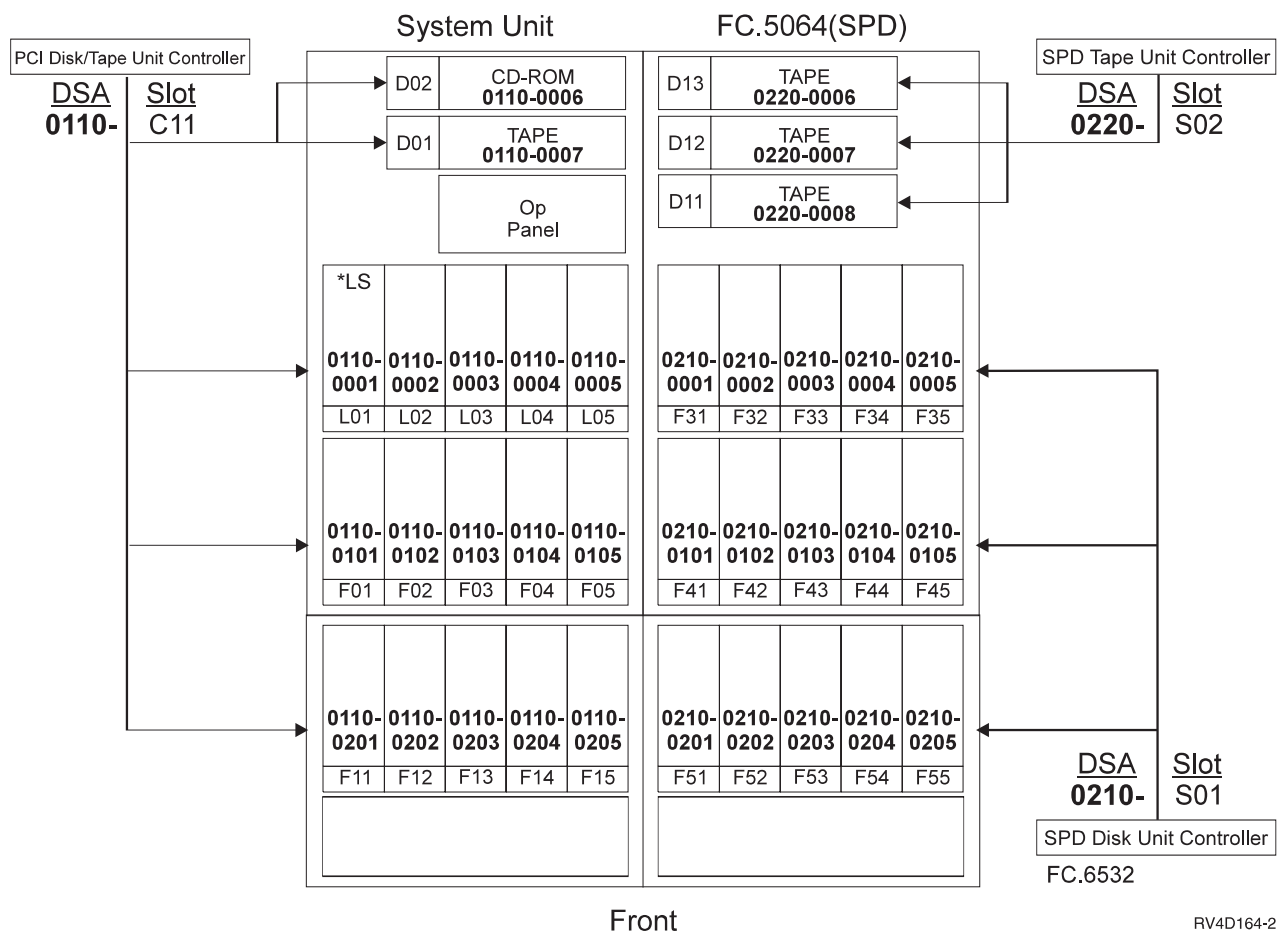


Figure 59. Disk Addressing in SPD FC 5064 Expansion



RV4D164-2

Figure 60. Disk Addressing in SPD FC 5064 Expansion with FC 6532/6533 Controller

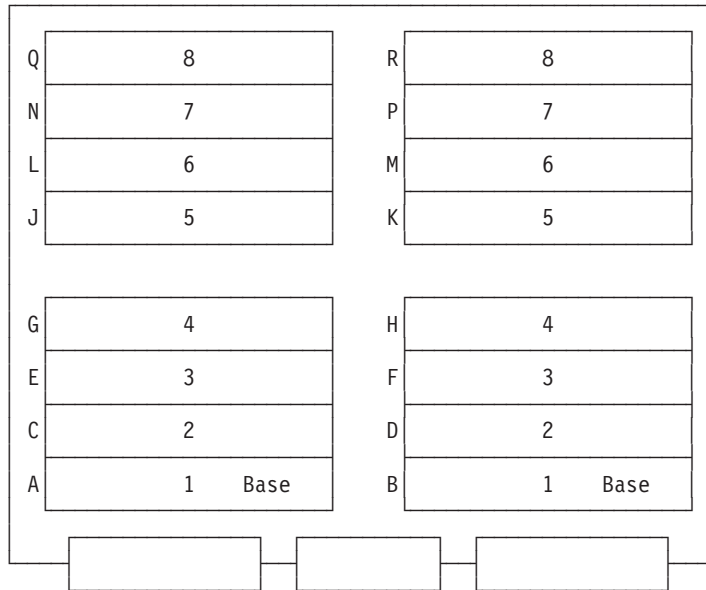


Figure 61. Model S20 main storage riser card. Processors: FC 2161, FC 2163, FC 2165, FC 2166, FC 2170, FC 2177, and FC 2178

### Model S20 - Processor and Main Storage Features:

Table 37. Model S20 Processor and Main Storage Features

Description	FC 2161	FC 2163	FC 2165, FC 2170	FC 2166	FC 2177 FC 2178
Number of Processors	1	1	2	4	4
Base Main Storage	256MB	256MB	256MB	256MB	256 MB
Max Main Storage	2048MB	2048MB	4096MB	4096MB	4096MB
Number of additional FC 3001 Supported	14	14	30	30	30
Number of additional FC 3002 Supported	14	14	30	30	30
Number of DIMM Positions	16	16	32	32	32
Memory Organization	DIMM Pairs	DIMM Pairs	DIMM Pairs	DIMM Pairs	DIMM Pairs
Clock Card (CCIN)	2834	2833	2833	2833	2833

Table 38. Model S20 — Processor Locations

Feature	Processor 1 Location M01	Processor 2 Location M02
FC 2166	2165	2166
FC 2177	2165	2177
FC 2178	2165	2178

## Model S20 — Base System Features:

Table 39. Model S20 —Base System Features

Base Feature	Location	Features
Load Source disk	L01	<ul style="list-style-type: none"><li>• 9707 (4.19GB - 6607)</li><li>• 8813 (8.58GB - 6713)</li><li>• 8824 (17.5GB - 6714)</li></ul>
PCI Disk/Tape Controller	C11	<ul style="list-style-type: none"><li>• 9728 (5 disks, 1 tape, 1 CD)</li></ul>
Twinax Console	C09	<ul style="list-style-type: none"><li>• 9720 (Twinax/ECS - 2720)</li></ul>
Client Access Comm Console	C09	<ul style="list-style-type: none"><li>• 9721 (2 port Comm - 2721)</li></ul>
ECS	C09	<ul style="list-style-type: none"><li>• 9720</li><li>• 9721</li></ul>
Base LAN	C08	<ul style="list-style-type: none"><li>• 9723 (Ethernet - 2723)</li><li>• 9724 (Token ring - 2724)</li></ul>
Base LAN	C01	<ul style="list-style-type: none"><li>• 9738 (10/100 Ethernet - 2838)</li></ul>

## Model S20 - Power and Battery Features:

Table 40. Model S20 Power and Battery

Power Feature	Description	Details
Base 1	Base Power FC 2161	<ul style="list-style-type: none"><li>• SPCN Support</li><li>• Continuously Powered Memory (CPM)</li></ul>
Base 2	Base Power FC 2163, FC 2165, FC 2166, FC 2170, FC 2177, FC 2178	<ul style="list-style-type: none"><li>• SPCN Support</li><li>• Continuously Powered Memory (CPM)</li></ul>
5153	Redundant Power	<ul style="list-style-type: none"><li>• Allowed on processors FC 2163, FC 2165, FC 2166, FC 2170, FC 2177, FC 2178</li><li>• 2 Power supplies<ul style="list-style-type: none"><li>– 845 watt</li><li>– 650 watt</li></ul></li><li>• Installs in FC 5064 Expansion Unit</li></ul>

## Model S20 - Internal Expansion Features:

Table 41. Model S20 Internal Expansion Features

Expansion Features	Description	Details
5064	System Unit Expansion	Expands system unit capacity (with FC 7129 or FC 7131)
7131	Book-style (SPD) card cage	<ul style="list-style-type: none"><li>• 6 book slots</li><li>• Enables external bus expansion</li></ul>

Table 41. Model S20 Internal Expansion Features (continued)

Expansion Features	Description	Details
7129	PCI-style card cage	<ul style="list-style-type: none"> <li>• 14 PCI IOA slots</li> <li>• 3 PCI Controller positions plus one Integrated Netfinity Server Support position</li> <li>• Enables External Bus Expansion</li> </ul>
7128	DASD expansion cage	<ul style="list-style-type: none"> <li>• 5 disk unit slots</li> <li>• Concurrent maintenance support</li> </ul>
7130	Removable media cage	Allows FC 5064 expansion to support 3 removable-media (tape) units

#### Model S20 — Feature Install Restrictions:

- FC 2624 not allowed in Slot S01 of SPD expansion (FC 7131).
- FC 2624 not allowed to control internal tape devices of System Expansion Unit FC 5064, therefore can only be used in Slot S02 when no internal tape units are present and to control external diskette.

#### Model S20 Summary:

Table 42. Model S20 Summary

Description/ Function	FC 2161	FC 2163	FC 2165, FC 2166	FC 2177, FC 2178
Main Storage				
Maximum DIMMs (MB)	2048	2048	4096	4096
DASD Storage (GB)				
Integrated Max DASD	944.8	944.8	944.8	944.8
Total Maximum	944.8	944.8	944.8	944.8
Diskette				
Diskette (Max/Sys)	2	2	2	2
Int Tape and CDROM Attach (Max/Sys)				
1/4" and/or 8mm Cart, CDROM (3)	18	18	18	18
Ext Tape (maximums)				
Ext Tape (Max/Sys)	4	4	4	4
8mm Cart - 7208 (4)	4	4	4	4
1/2" Reel - 9348 (4)	4	4	4	4
1/2" Reel - 2440 (4)	4	4	4	4
1/2" Reel - 9347	2	2	2	0
1/2" Cart/Reel - 34xx, 35xx	4	4	4	4
Optical Libraries				
Optical Libraries - Max	14	14	14	14
Physical Packaging				

Table 42. Model S20 Summary (continued)

Description/ Function	FC 2161	FC 2163	FC 2165, FC 2166	FC 2177, FC 2178
Ext SPD I/O Bus - Optical	0-4	0-4	0-4	0-4
I/O Card Slots - SPD	0-58	0-58	0-58	0-58
I/O Card Slots - PCI	8-22	8-22	8-22	8-22
Workstation Attach - Maximums				
Twinax Controllers	1	1	1	60
Twinax Devices	28	28	28	2392
ASCII Controllers	2	2	2	58
Max ASCII Devices	28	28	28	1044
Communication Lines - Max	96	96	96	96
Cryptographic IOP - Max	1	1	1	1
Fax IOP-Max	32	32	32	32
Lan Ports				
LAN Ports Max	16	16	16	16
Wireless Lan IOP - Max	3	3	3	3
Integrated Netfinity Server (SPD) Max	16	16	16	16
Integrated Netfinity Server (PCI) Max	2	2	2	2
PCI LAN - Max	8	8	8	8
<b>Notes:</b> 1. PCI and SPD system unit expansion features are mutually exclusive. 2. These are internal tape or CDROM drives. Maximum of 1 integrated CDROM drive. 3. Total number of tape drives does not increase.				

Model 640

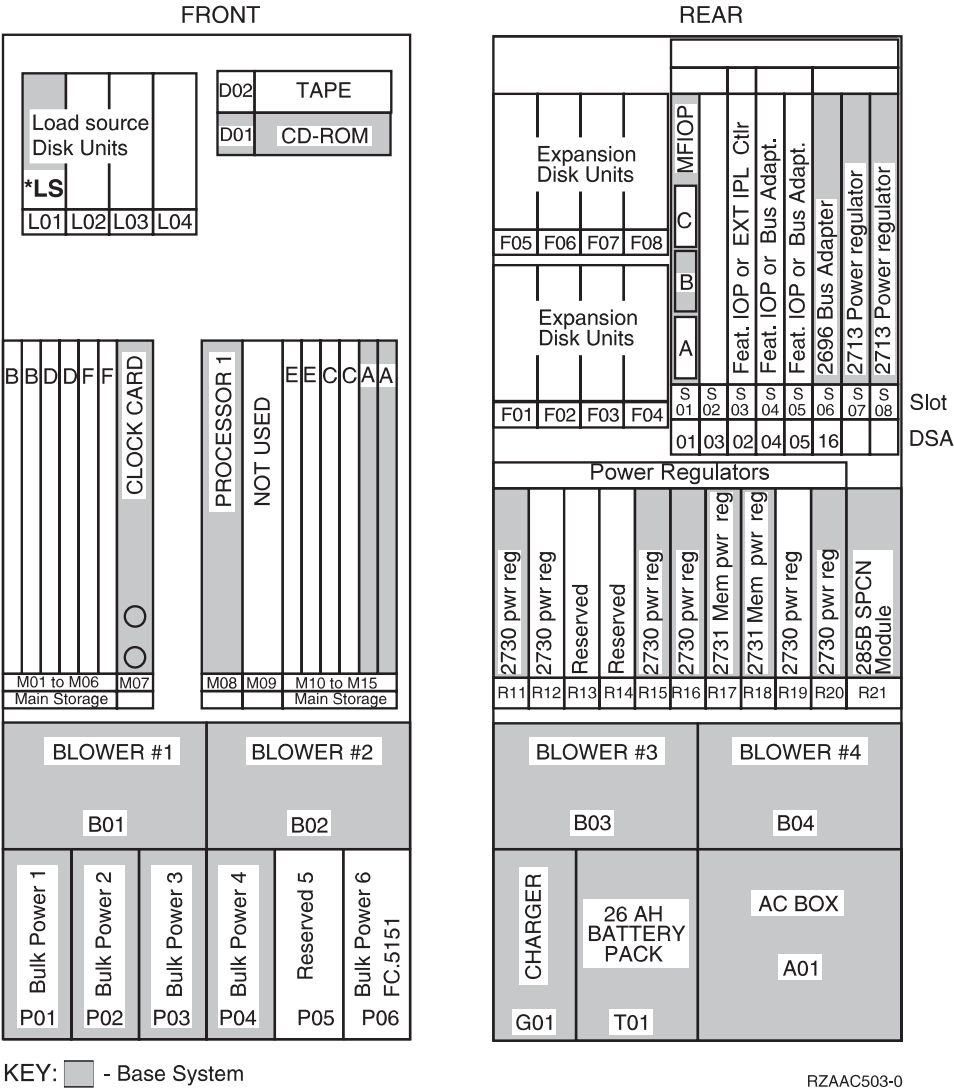


Figure 62. Model 640 CEC

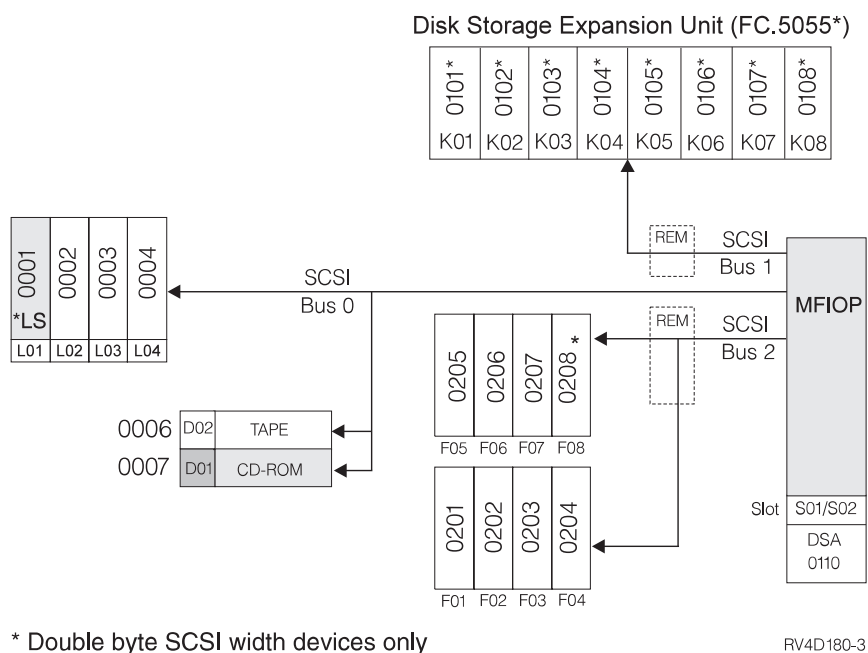


Figure 63. Model 640 - Disk Addressing in CEC with FC 5055

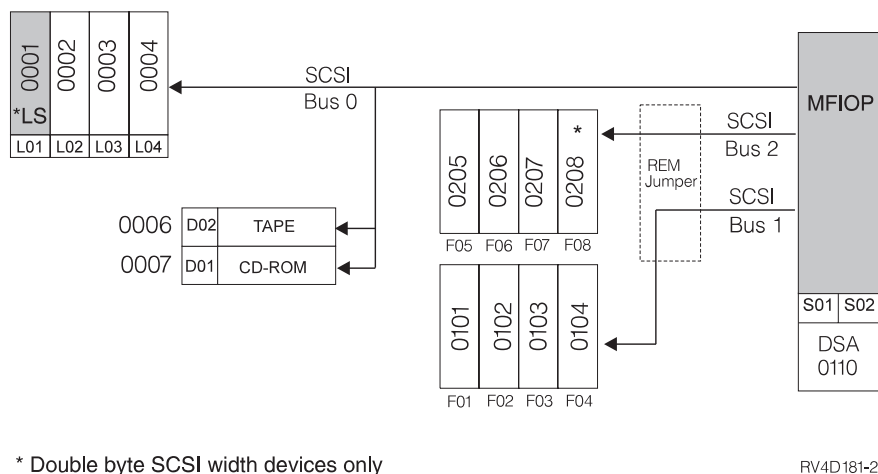


Figure 64. Model 640 - Disk Addressing in CEC without FC 5055

### Model 640 - Processor and Main Storage Features:

Table 43. Model 640 Processor and Main Storage Features

Item	FC 2237	FC 2238	FC 2239
Number of Processors	1	2	4
Processor Book Slots Used	1	1	1
Bus Adapter (Base)	2696	2696	2696
(Expansion)	2695	2695	2695
Memory Organization	Card Pairs	Card Pairs	Card Pairs
Base Main Storage	512MB	512MB	512MB
Maximum Main Storage	12GB	12GB	12GB

Table 43. Model 640 Processor and Main Storage Features (continued)

Item	FC 2237	FC 2238	FC 2239
128MB Feature <sup>1</sup>	3189	3189	3189
256MB Feature <sup>1</sup>	3179 / 3190	3179 / 3190	3179 / 3190
512MB Feature <sup>1</sup>	3180 / 3191	3180 / 3191	3180 / 3191
1024MB Feature <sup>1</sup>	3192	3192	3192
CPM (2)	Yes	Yes	Yes
Clock Card CCIN	2822	2822	2822
<b>Notes:</b> 1. If more than 4 Main Storage cards are installed, the following power changes are required: a. FC 5151 (Bulk power supply 6), position P06 b. Power regulator card (CCIN.2730) added to R12 c. Power regulator card (CCIN.2730) moved from R15 to R19 2. CPM - Continuously Powered Memory. Base rating for Model 640 is 16GB at 24 hr (i.e., without External Battery).			

Table 44. Model 640 — Processor Locations

Feature	Location M08	Location M09
FC 2237	2237	air flow
FC 2238	2238	air flow
FC 2239	2239	air flow

### Model 640 — Base System Features:

Table 45. Model 640 —Base System Features

Base Feature	Location	Description
Load Source disk	L01	<ul style="list-style-type: none"> <li>9907 (4.19GB - 6607)</li> <li>8713 (8.58GB- 6713)</li> <li>8714 (17.5GB - 6714)</li> </ul>
MFIOF	S01/S02	<ul style="list-style-type: none"> <li>975x (MFIOF — 675x)</li> </ul>
Twinax Console	MFIOF IOA Position C	<ul style="list-style-type: none"> <li>9280 (6180 - Twinax)</li> </ul>
Client Access Comm Console	MFIOF IOA Position B	<ul style="list-style-type: none"> <li>9699 (2699 - 2 port Comm)</li> <li>with FC 0344 cable</li> </ul>
Operations Console	MFIOF IOA Position B	<ul style="list-style-type: none"> <li>9699 (2699 - Comm)</li> <li>with FC 0348 cable</li> <li>optional Remote Control Panel cable FC 0380 connects to MI port (J19)</li> </ul>
ASCII Console	SPD IOP feature slot	<ul style="list-style-type: none"> <li>9141 (6141 ASCII WSC)</li> </ul>
ECS	MFIOF IOA position B	<ul style="list-style-type: none"> <li>9699 (2699 - 2 port comm)</li> </ul>
Main Storage	M14 + M15	<ul style="list-style-type: none"> <li>2x 9179 (3179 - 256MB)</li> </ul>

**Model 640 - Power and Battery Features:***Table 46. Model 640 Power and Battery Features*

Power Feature	Description	Details
CCIN.2730	Programmable Power Regulator	<ul style="list-style-type: none"> <li>Required when more than 4 main storage cards are installed.</li> <li>Installs in R12</li> </ul>
FC 5150	External Battery Backup	<ul style="list-style-type: none"> <li>Extends CPM hold time to 48 hours</li> <li>Required when main storage size exceeds 16GB</li> </ul>
FC 5151	Bulk Power Supply (650W)	<ul style="list-style-type: none"> <li>Required with FC 5055 Storage Expansion Unit.</li> <li>Required when more than 4 main storage cards are installed.</li> </ul>

*Table 47. Model 640 Power Regulator Slot Content by Processor Feature*

Processor Feature	Type	Mem	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	Bulk Power
2237, 2238, 2239	A	2 to 4	PR				PR	PR	MC	MC		PR	P01 -P04
		>4	PR	PR				PR	MC	MC	PR	PR	P01- P04, P06
<b>Note:</b> <ul style="list-style-type: none"><li><b>PR</b>— Programmable Regulator, CCIN.2730</li><li><b>MC</b>— Memory Controller, CCIN.2731</li></ul>													

**Model 640 - Feature Install Restrictions:**

- FC 2624 (tape/diskette IOP) not allowed in Model 640 System Unit.

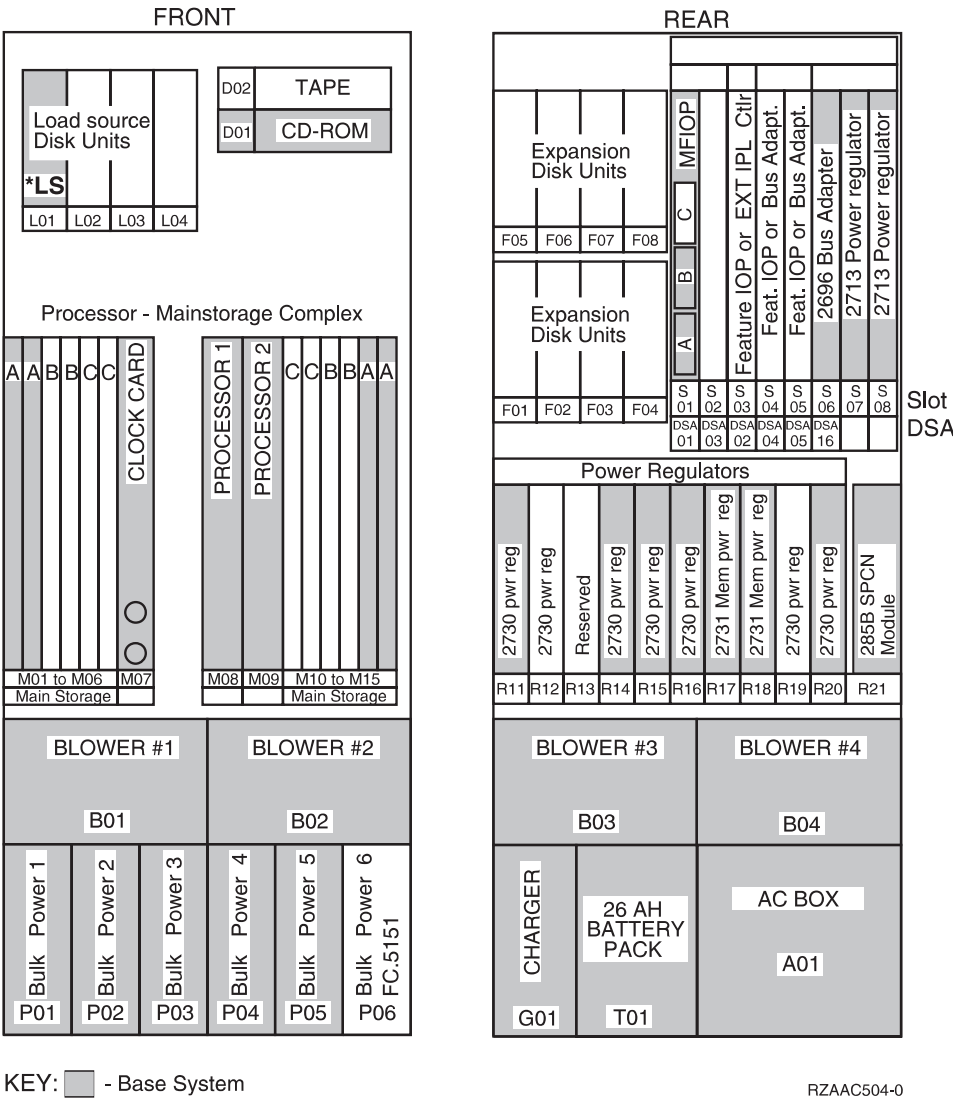
**Model 640 Summary:***Table 48. Model 640 Summary*

	FC 2237	FC 2238	FC 2239
Main Storage (GB) Min/Max <sup>1</sup>	.5 - 16	.5 - 16	.5 - 16
Physical Disk Unit Capacity (GB)			
Base	4.19	4.19	4.19
Maximum Internal (156 X 8.58)	1340	1340	1340
Maximum External (19 X 68.71)	1305	1305	1305
Total System	1340	1340	1340
Int/Ext disk unit IOPs <sup>2</sup>	1-37	1-37	1-37
Diskette (8 or 5.25 inch)	0-2	0-2	0-2
Tape Attachment			

Table 48. Model 640 Summary (continued)

	FC 2237	FC 2238	FC 2239
1/4-inch and/or 8mm <sup>3</sup>	0-17	0-17	0-17
8mm Cartridge, 9427 <sup>4</sup>	0-4	0-4	0-4
1/2-inch Reel 2440, 9348 <sup>4</sup>	0-4	0-4	0-4
3490, 3590, 3570	0-8	0-8	0-8
9347	0-2	0-2	0-2
Physical Packaging			
SPD I/O Bus	1-19	1-19	1-19
I/O Card Slots	3-235	3-235	3-235
System Expansion (FC 507X + FC 508X)	0-18	0-18	0-18
Bus Expansion (FC 5044)	0-9	0-9	0-9
Storage Expansion (FC 5055)	0-1	0-1	0-1
Storage Expansion (FC 5052/FC 5058)	0-18	0-18	0-18
Workstation Attachment			
Controllers Min/Max	1-175	1-175	1-175
TWINAX Devices	7000	7000	7000
ASCII Devices	3150	3150	3150
Communication Lines	1-200	1-200	1-200
FAX IOPs (2 lines/IOP)	0-32	0-32	0-32
Cryptographic	0-1	0-1	0-1
LAN Ports (16 FSIOPs maximum)	0-32	0-32	0-32
Optical Libraries	0-22	0-22	0-22
<b>Notes:</b> 1. Must replace base memory to reach maximums. 2. Total includes the FC 975x MFIOP. The combination of internal and external IOPs cannot exceed this number. 3. This is the combined quantity of internal tapes. 4. Maximum of 4 tape drives and libraries; may be any combination of 2440, 7208 or 9348s. Each 9427 is counted as either 1 or 2 7208s.			

Model 730



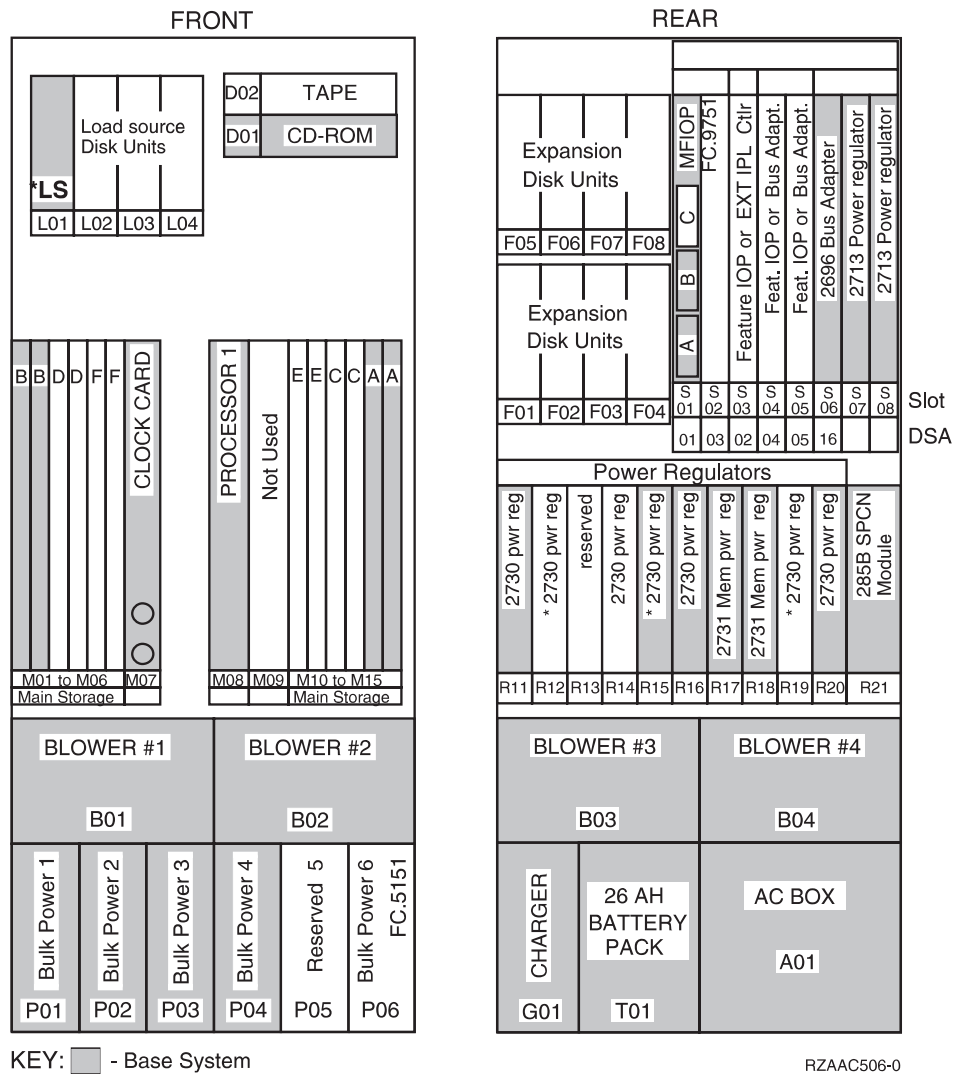


Figure 66. Model 730 1W, 2W, 4W CEC

**Note:** When the system has more than 4 main storage cards installed, R12 is added and R15 moves to R19.

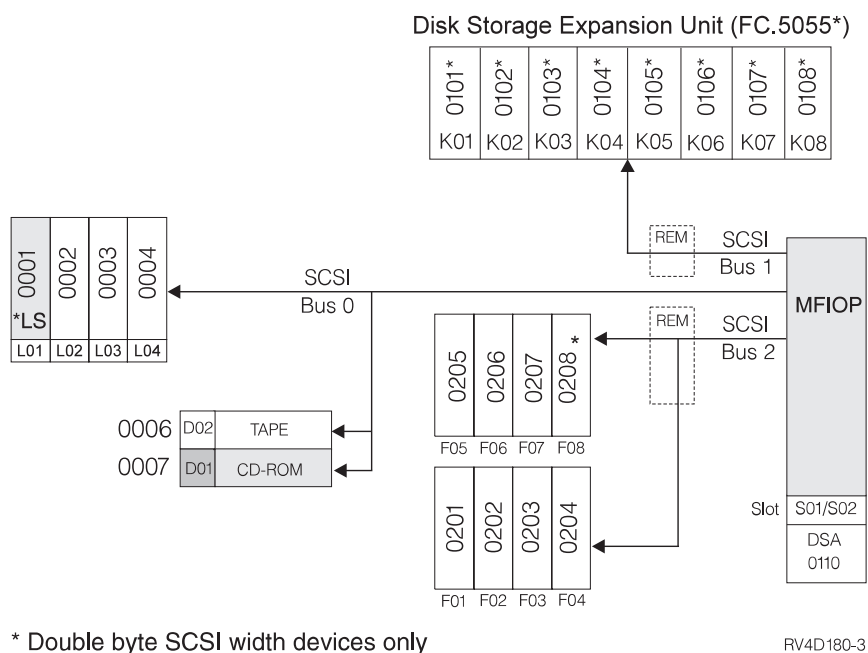


Figure 67. Model 730 - Disk Addressing in CEC with FC 5055

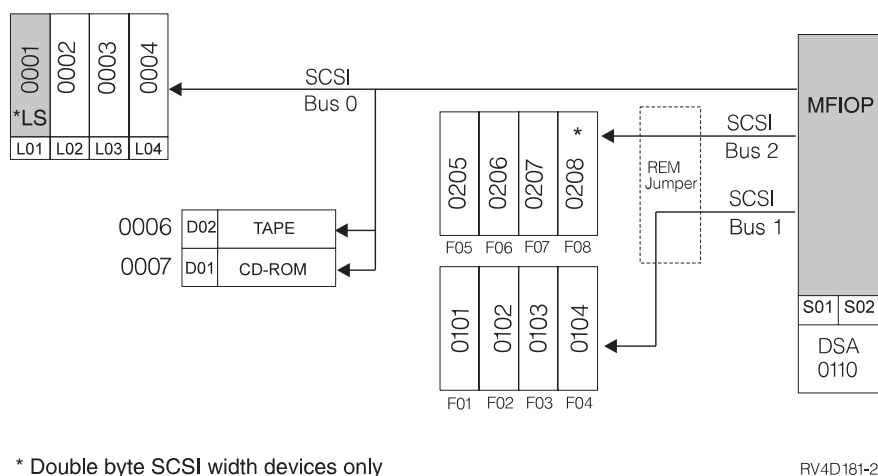


Figure 68. Model 730 - Disk Addressing in CEC without FC 5055

### Model 730 - Processor and Main Storage Features:

Table 49. Model 730 Processor and Main Storage Features

Card/Feature	FC 2065	FC 2066	FC 2067	FC 2068
Number of Processors	1	2	4	8
Processor Book Slots Used	1	1	1	2
Base Bus Adapter (CCIN)	2696	2696	2696	2696
Expansion Bus Adapter (CCIN)	2695	2695	2695	2695
Main Storage Organization	Card Pairs	Card Pairs	Card Pairs	Card Quads (4x cards)

Table 49. Model 730 Processor and Main Storage Features (continued)

Card/Feature	FC 2065	FC 2066	FC 2067	FC 2068
Base Main Storage (MB)	512MB	512MB	512MB	1024MB
Maximum Main Storage (MB) (1)	12GB	12GB	12GB	12GB
128MB Main Storage Card (FC) (2)	3189	3189	3189	3189
256MB Main Storage Card (FC) (2)	3179 / 3190	3179 / 3190	3179 / 3190	3179 / 3190
512MB Main Storage Card (FC) (2)	3180 / 3191	3180 / 3191	3180 / 3191	3180 / 3191
1024MB Main Storage Card (FC) (2)	3192	3192	3192	3192
CPM (3)	Yes	Yes	Yes	Yes
Clock Card CCIN - Slot M07	2822	2822	2822	2822
Processor CCIN - Slot M08	2257	2258	2259	2259
Processor CCIN - Slot M09	n/a	n/a	n/a	2260
<b>Notes:</b> 1. Must remove Base memory features to reach maximum 2. If more than 4 Main Storage cards are installed, the following power changes are required: <ul style="list-style-type: none"> <li>• FC 5151 (Bulk power supply 6), position P06</li> <li>• Power regulator card (CCIN.2730) added to R12</li> <li>• Power regulator card (CCIN.2730) moves from R15 to R19</li> </ul> 3. CPM - Continuously Powered Memory. Base rating for Model S30 is 16GB at 24 hrs. (i.e. without external battery)				

Table 50. Model 730 — Processor Locations

Feature Code	Location M08	Location M09
2065 (1W) <b>IC FC</b> 1509 1508 1507 1506	241F <b>IC FC</b> 2A6D 2A6C 2A6B 2A6A	air flow
2066 (2W) <b>IC FC</b> 1510 1509 1508 1507 1506	241E <b>IC FC</b> 2B6C 2B6B 2B6A 2A6F 2A6E	air flow
2067 (4W) <b>IC FC</b> 1511 1510 1509 1508 1506	2241C <b>IC FC</b> 2C6B 2C6A 2B6F 2B6E 2B6D	air flow

Table 50. Model 730 — Processor Locations (continued)

Feature Code	Location M08	Location M09
2068 (8W)	241C	241D
IC FC	IC FC	IC FC
1511	2C6B	2206
1510	2C6A	2206
1509	2B6F	2206
1508	2B6E	2206
1506	2B6D	2206

### Model 730 — Base System Features:

Table 51. Model 730 —Base System Features

Base Feature	Location	Description
Load Source disk	L01	<ul style="list-style-type: none"> <li>• 9907 (4.19GB - 6607)</li> <li>• 8713 (8.58GB - 6713)</li> <li>• 8714 (17.54GB- 6714)</li> <li>• 8617 (8.58GB- 6713)</li> <li>• 8618 (17.54GB- 6714)</li> </ul>
MFIOF	S01/S02	<ul style="list-style-type: none"> <li>• 9751 (V4R1)</li> <li>• 9754 (V4R2)</li> </ul>
Twinax Console	MFIOF IOA Position C	<ul style="list-style-type: none"> <li>• 9280 (6180 - Twinax)</li> </ul>
Client Access Comm Console	MFIOF IOA Position B	<ul style="list-style-type: none"> <li>• 9699 (2699 - 2 port Comm)</li> <li>• with FC 0344 cable</li> </ul>
Operations Console	MFIOF IOA Position B	<ul style="list-style-type: none"> <li>• 9699 (2699 - 2 port Comm)</li> <li>• with FC 0328 cable</li> </ul>
ASCII Console	SPD IOP feature slot	<ul style="list-style-type: none"> <li>• 9141 (6141 -ASCII WSC)</li> </ul>
ECS	MFIOF IOA position B	<ul style="list-style-type: none"> <li>• 9699 (2699 - 2 port comm)</li> </ul>
Base Lan - FDDI	SPD IOP feature slot	<ul style="list-style-type: none"> <li>• 8664 (2618 - FDDI )</li> </ul>
Base Lan - Token Ring	SPD IOA feature, hosts: MFIOF, FC 6616, FC 2629	<ul style="list-style-type: none"> <li>• 9249 (6149 - Token Ring )</li> </ul>
Base Lan - Ethernet	SPD IOA feature, hosts: MFIOF, FC 6616, FC 2629	<ul style="list-style-type: none"> <li>• 9381 (6181 - Ethernet )</li> </ul>
Base Lan - HS 10 /100 Ethernet	PCI IOA feature, host: FC 2810	<ul style="list-style-type: none"> <li>• 9738 (2838 - 10/100 HS Ethernet)</li> </ul>

### Model 730 - Power and Battery Features:

Table 52. Model 730 Power and Battery Features

Power Feature	Description	Details
CCIN.2730	Programmable Power Regulator	See Table 53 on page 253.

Table 52. Model 730 Power and Battery Features (continued)

Power Feature	Description	Details
FC 5150	External Battery Backup	<ul style="list-style-type: none"> <li>Extends CPM hold time to 48 hours</li> <li>Required when main storage size exceeds 16GB</li> </ul>
FC 5151	Bulk Power Supply (650W)	<ul style="list-style-type: none"> <li>Required with FC 5055 Storage Expansion Unit on Model S30</li> <li>Required when more than 4 main storage cards are installed.</li> </ul>

Table 53. Model 730 Power Regulator Slot Content by Processor Feature

Processor Feature	Type	Mem Slots	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	Bulk Power
2065 2066	N (1W)	2 to 4	PR				PR	PR	MC	MC		PR	P01-P04
	N (2W)	>4	PR	PR				PR	MC	MC	PR	PR	P01-P04, P06
2067	N (4W)	2 to 4	PR			PR	PR	PR	MC	MC		PR	P01-P04
		>4	PR	PR		PR		PR	MC	MC	PR	PR	P01-P04, P06
2068	N (8w)	Base	PR		PR	PR	PR	PR	MC	MC		PR	P01-P05
		>4	PR	PR	PR	PR		PR	MC	MC	PR	PR	P01-P06
<b>Note:</b> <ul style="list-style-type: none"><li><b>PR</b>— Programmable Regulator, CCIN.2730</li><li><b>MC</b>— Memory Controller, CCIN.2731</li></ul>													

**Model 730 - Feature Install Restrictions:**

- FC 2624 not allowed in Model S30 System Unit.

**Model 730 Summary:**

Table 54. Model 730 Summary

	All Feature Codes
Main Storage (GB) Min/Max <sup>1</sup>	.5 - 24
Physical Disk Unit Capacity (GB)	

Table 54. Model 730 Summary (continued)

	All Feature Codes
Base	4.19
Maximum Internal (156 X 8.58)	1683
Maximum External (19 X 68.71)	1649
Total System	1683
Int disk unit IOPs <sup>2</sup>	1-37
Diskette (8 or 5.25 inch)	0-2
Tape Attachment	
1/4-inch and 8mm <sup>3</sup>	0-17
8mm Cartridge, 9427 <sup>4</sup>	0-4
1/2-inch Reel 2440, 9348 <sup>4</sup>	0-4
3490, 3590, 3570	0-8
9347	0-2
Physical Packaging	
SPD I/O Bus	1-19
I/O Card Slots	3-235
System Expansion (FC 507x + FC 508x)	0-18
Storage Expansion (FC 5055)	0-1
Storage Expansion (FC 5052 / FC 5058)	0-18
Workstation Attachment	
Controllers Min/Max	1-175
TWINAX Devices <sup>5</sup>	7000
ASCII Devices <sup>5</sup>	3150
Communication Lines	1-250
FAX IOPs (2 lines/IOP)	0-32
Cryptographic	0-1
LAN Ports (16 Integrated Netfinity Server maximum)	1-48
Optical Libraries	0-22
<b>Note:</b> 1. Must replace base memory to reach maximums. 2. Total includes the FC 975x MFIOP. 3. Combined quantity of internal tapes. 4. Maximum of 4 tape drives and libraries; may be any combination of 2440, 7208 or 9348s. Each 9427 is counted as either 1 or 2 7208s.	

Model S30

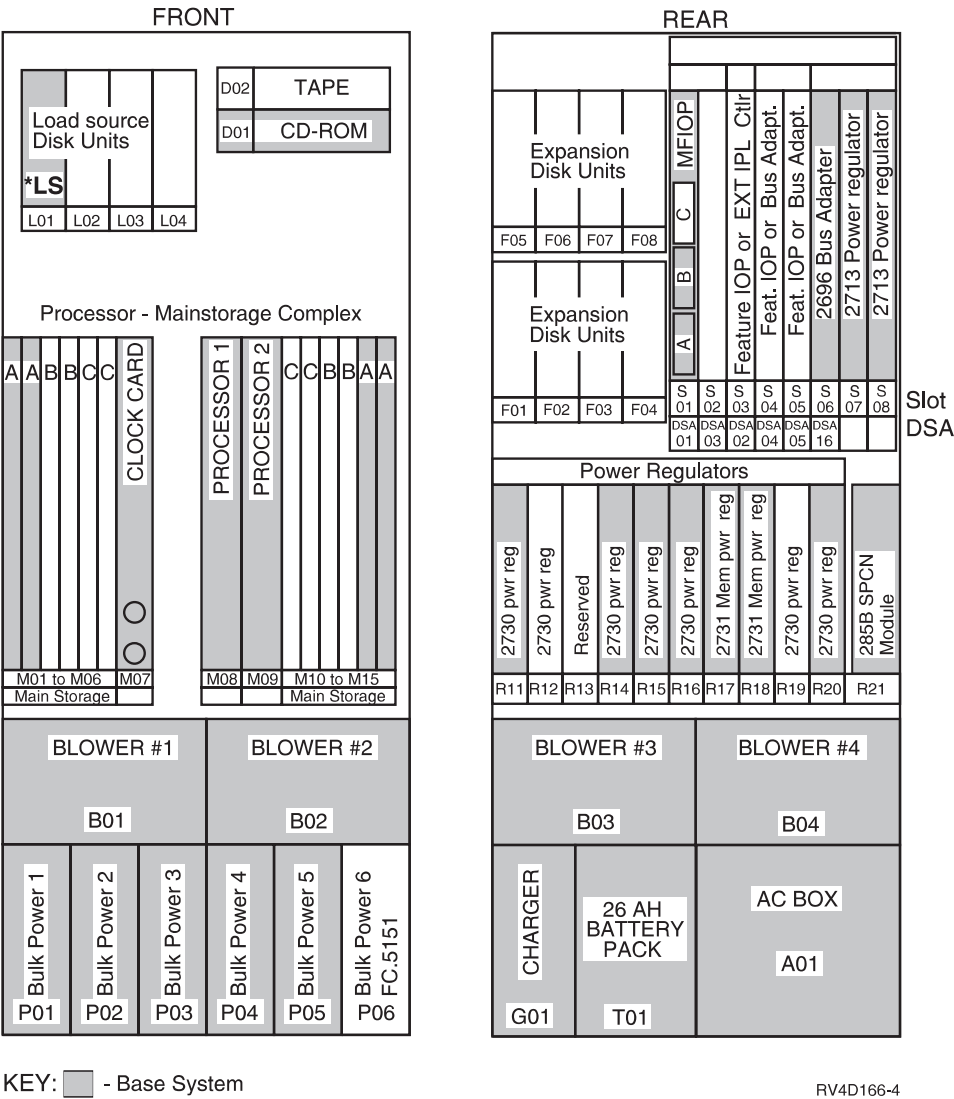


Figure 69. Model S30 8W CEC

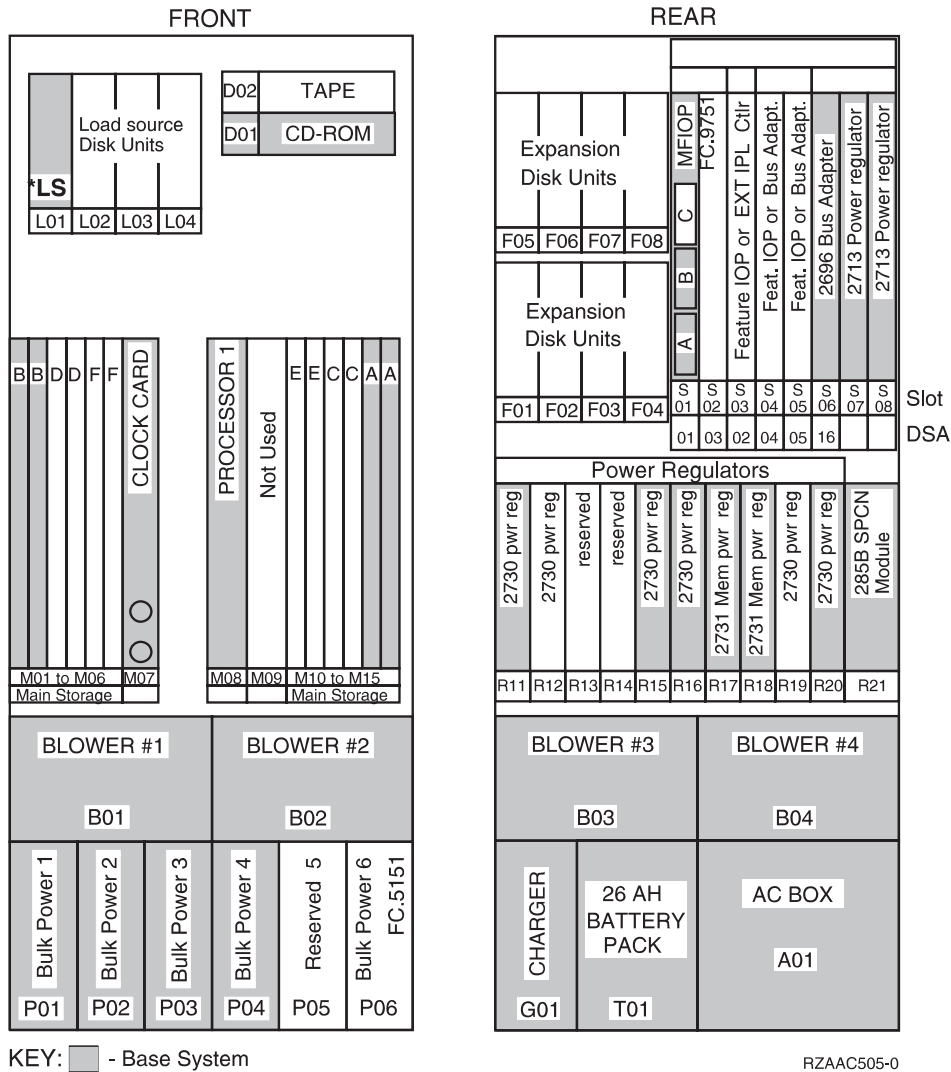


Figure 70. Model S30 1 to 4W CEC

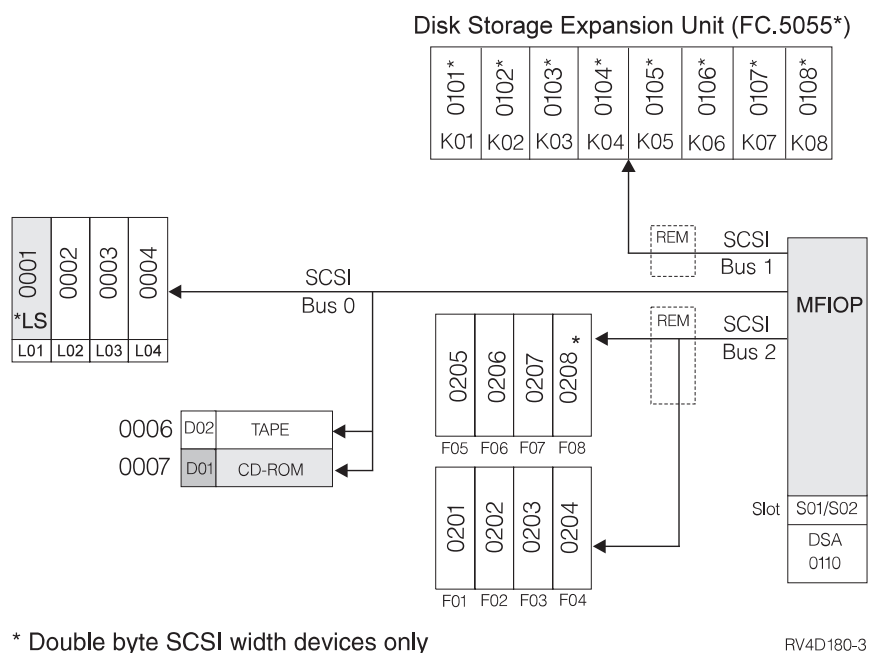


Figure 71. Model S30 - Disk Addressing in CEC with FC 5055

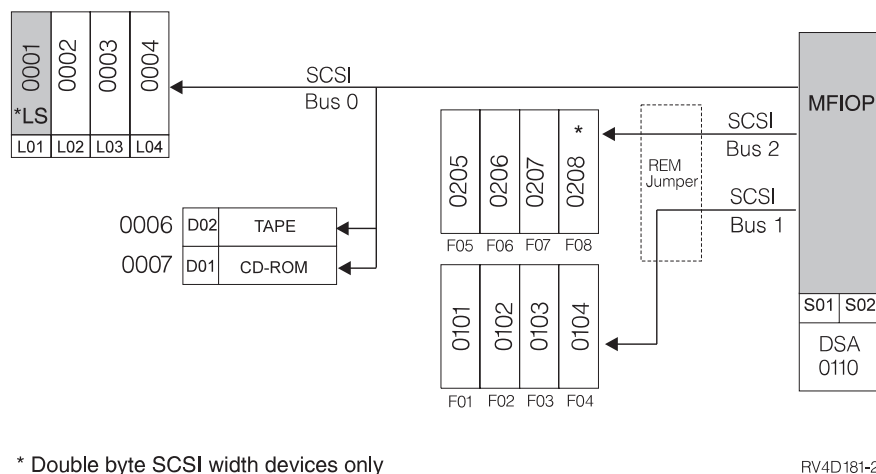


Figure 72. Model S30 - Disk Addressing in CEC without FC 5055

### Model S30 - Processor and Main Storage Features:

Table 55. Model S30 Processor and Main Storage Features

Card/Feature	FC 2257	FC 2258	FC 2259, FC 2320	FC 2260, FC 2321, FC 2322
Number of Processors	1	2	4	8
Processor Book Slots Used	1	1	1	2
Base Bus Adapter (CCIN)	2696	2696	2696	2696
Expansion Bus Adapter (CCIN)	2695	2695	2695	2695
Main Storage Organization	Card Pairs	Card Pairs	Card Pairs	Card Quads (4x cards)

Table 55. Model S30 Processor and Main Storage Features (continued)

Card/Feature	FC 2257	FC 2258	FC 2259, FC 2320	FC 2260, FC 2321, FC 2322
Base Main Storage (MB)	512MB	512MB	512MB	1024MB
Maximum Main Storage (MB) (1)	16GB	16GB	16GB	24GB
128MB Main Storage Card (FC) (2)	3189	3189	3189	3189
256MB Main Storage Card (FC) (2)	3179 / 3190	3179 / 3190	3179 / 3190	3179 / 3190
512MB Main Storage Card (FC) (2)	3180 / 3191	3180 / 3191	3180 / 3191	3180 / 3191
1024MB Main Storage Card (FC) (2)	3192	3192	3192	3192
CPM (3)	Yes	Yes	Yes	Yes
Clock Card CCIN - Slot M07	2822	2822	2822	2822
<b>Notes:</b> 1. Must remove Base memory features to reach maximum 2. If more than 4 Main Storage cards are installed, the following power changes are required: <ul style="list-style-type: none"> <li>• FC 5151 (Bulk power supply 6), position P06</li> <li>• Power regulator card (CCIN.2730) added to R12</li> <li>• Power regulator card (CCIN.2730) moves from R15 to R19</li> </ul> 3. CPM - Continuously Powered Memory. Base rating for Model S30 is 16GB at 24 hrs. (i.e. without external battery)				

Table 56. Model S30 — Processor Locations

Feature	Location M08	Location M09
FC 2257	2257	air flow
FC 2258	2258	air flow
FC 2259	2259	air flow
FC 2260	2259	2260
FC 2320	2320	air flow
FC 2321	2320	2321
FC 2322	2320	2322

### Model S30 — Base System Features:

Table 57. Model S30 —Base System Features

Base Feature	Location	Description
Load Source disk	L01	<ul style="list-style-type: none"> <li>• 9907 (4.19GB - 6607)</li> <li>• 8713 (8.58GB - 6713)</li> <li>• 8714 (17.54GB - 6714)</li> </ul>
MFIOF	S01/S02	<ul style="list-style-type: none"> <li>• 9751 (V4R1)</li> <li>• 9754 (V4R2)</li> </ul>

Table 57. Model S30 —Base System Features (continued)

Base Feature	Location	Description
Twinax Console	MFIOP IOA Position C	<ul style="list-style-type: none"> <li>9280 (6180 - Twinax)</li> </ul>
Client Access Comm Console	MFIOP IOA Position B	<ul style="list-style-type: none"> <li>9699 (2699 - 2 port Comm)</li> <li>with FC 0344 cable</li> </ul>
Operations Console	MFIOP IOA Position B	<ul style="list-style-type: none"> <li>9699 (2699 - Comm)</li> <li>with FC 0348 cable</li> <li>optional Remote Control Panel cable</li> <li>FC 0380 connects to MI port (J19)</li> </ul>
ASCII Console	SPD IOP feature slot	<ul style="list-style-type: none"> <li>9141 (6141 - ASCII WSC)</li> </ul>
ECS	MFIOP IOA position B	<ul style="list-style-type: none"> <li>9699 (2699 - 2 port comm)</li> </ul>
Base Lan - FDDI	SPD IOP feature slot	<ul style="list-style-type: none"> <li>8664 (2618 - FDDI)</li> </ul>
Base Lan - Token Ring	SPD IOA feature, hosts: MFIOP, FC 6616, FC 2629	<ul style="list-style-type: none"> <li>9249 (6149 - Token Ring )</li> </ul>
Base Lan - Ethernet	SPD IOA feature, hosts: MFIOP, FC 6616, FC 2629	<ul style="list-style-type: none"> <li>9381 (6181 - Ethernet )</li> </ul>
Base Lan - HS 10 /100 Ethernet	PCI IOA feature, host: FC 2810	<ul style="list-style-type: none"> <li>9738 (2838 - 10/100 HS Ethernet)</li> </ul>

### Model S30 - Power and Battery Features:

Table 58. Model S30 Power and Battery Features

Power Feature	Description	Details
CCIN.2730	Programmable Power Regulator	<ul style="list-style-type: none"> <li>Required when more than 4 main storage cards are installed.</li> <li>Installs in R12, when R15 moves to R19</li> </ul>
FC 5150	External Battery Backup	<ul style="list-style-type: none"> <li>Extends CPM hold time to 48 hours</li> <li>Required when main storage size exceeds 16GB</li> </ul>
FC 5151	Bulk Power Supply (650W)	<ul style="list-style-type: none"> <li>Required with FC 5055 Storage Expansion Unit on Model S30</li> <li>Required when more than 4 main storage cards are installed.</li> </ul>

Table 59. Model S30 Power Regulator Slot Content by Processor Feature

Processor Feature	Type	Mem Slots	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	Bulk Power
2257, 2258, 2259, 2320	A	2 to 4	PR				PR	PR	MC	MC		PR	P01-P04
		>4	PR	PR				PR	MC	MC	PR	PR	P01-P04, P06
2260, 2321, 2322	A (8w)	2 to 4	PR			PR	PR	PR	MC	MC		PR	P01-P05
		>4	PR	PR		PR		PR	MC	MC	PR	PR	P01-P06
<b>Note:</b> <ul style="list-style-type: none"><li>• <b>PR</b>— Programmable Regulator, CCIN.2730</li><li>• <b>MC</b>— Memory Controller, CCIN.2731</li></ul>													

**Model S30 - Feature Install Restrictions:**

- FC 2624 not allowed in Model S30 System Unit.

**Model S30 Summary:**

Table 60. Model S30 Summary

	FC 2257	FC 2258	FC 2259, FC 2320	FC 2260, FC 2321, FC 2322
Main Storage (GB) Min/Max <sup>1</sup>	.5 - 16	.5 - 16	.5 - 16	1-24
Physical Disk Unit Capacity (GB)				
Base	4.19	4.19	4.19	4.19
Maximum Internal (156 X 8.58)	1340	1340	1340	1340
Maximum External (19 X 68.71)	1305	1305	1305	1305
Total System	1340	1340	1340	1340
Int disk unit IOPs <sup>2</sup>	1-37	1-37	1-37	1-37
Diskette (8 or 5.25 inch)	0-2	0-2	0-2	0-2
Tape Attachment				
1/4-inch and/or 8mm <sup>3</sup>	0-17	0-17	0-17	0-17
8mm Cartridge, 9427 <sup>4</sup>	0-4	0-4	0-4	0-4
1/2-inch Reel 2440, 9348 <sup>4</sup>	0-4	0-4	0-4	0-4
3490, 3590, 3570	0-8	0-8	0-8	0-8
Physical Packaging				

Table 60. Model S30 Summary (continued)

	FC 2257	FC 2258	FC 2259, FC 2320	FC 2260, FC 2321, FC 2322
SPD I/O Bus	1-19	1-19	1-19	1-19
I/O Card Slots	3-235	3-235	3-235	3-235
System Expansion (FC 507x + FC 508x)	0-18	0-18	0-18	0-18
Storage Expansion (FC 5055)	0-1	0-1	0-1	0-1
Storage Expansion (FC 5052 / FC 5058)	0-18	0-18	0-18	0-18
<b>Workstation Attachment</b>				
Controllers Min/Max	1-3	1-3	1-3	1-3
TWINAX Controllers	1	1	1	1
TWINAX Devices <sup>5</sup>	28	28	28	28
ASCII Controllers	2	2	2	2
ASCII Devices <sup>5</sup>	28	28	28	28
Communication Lines	1-200	1-200	1-200	1-200
FAX IOPs (2 lines/IOP)	0-32	0-32	0-32	0-32
Cryptographic	0-1	0-1	0-1	0-1
LAN Ports (16 Integrated Netfinity Server maximum)	1-32	1-32	1-32	1-32
Optical Libraries	0-22	0-22	0-22	0-22
<b>Note:</b> 1. Must replace base memory to reach maximums. 2. Total includes the FC 975x MFIOP. 3. Combined quantity of internal tapes. 4. Maximum of 4 tape drives and libraries; may be any combination of 2440, 7208 or 9348s. Each 9427 is counted as either 1 or 2 7208s. 5. The combined maximum number of local and remote displays attached to ASCII and Twinaxial is 28.				

Model 650

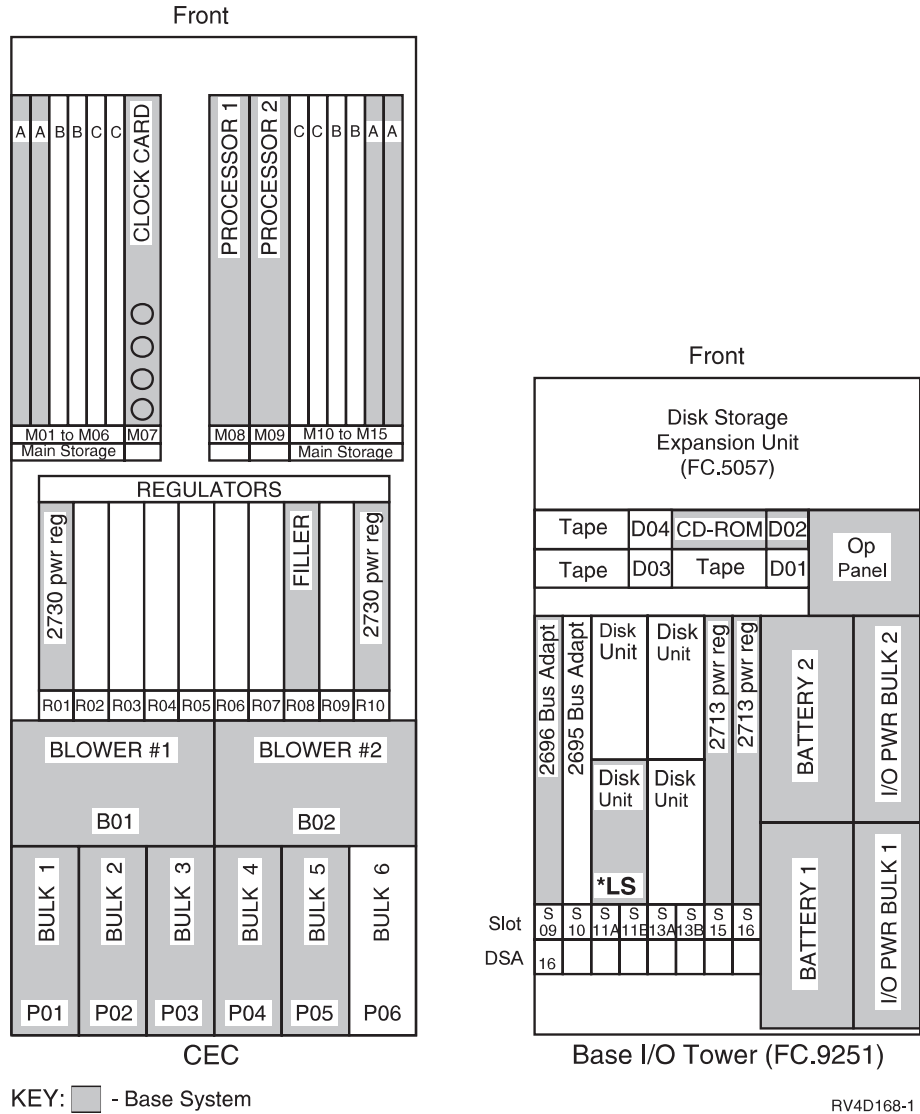
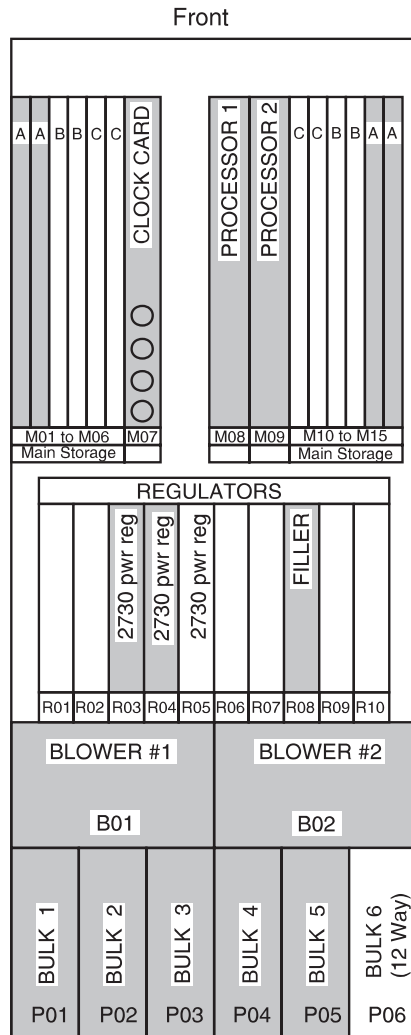
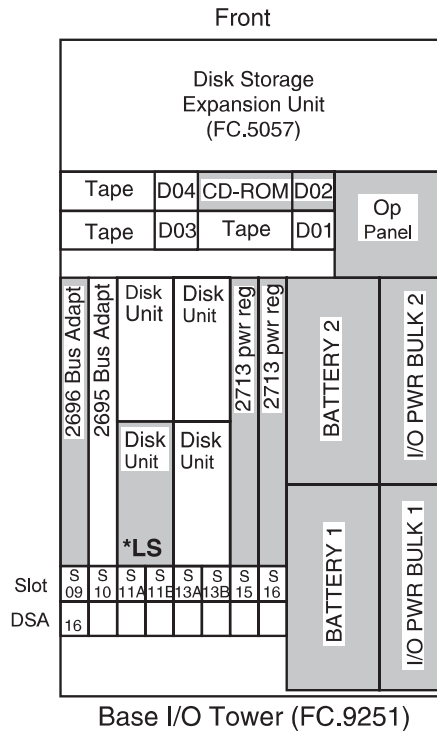


Figure 73. Model 650 Front View — FC 2240, FC 2243 ('A' Processor)

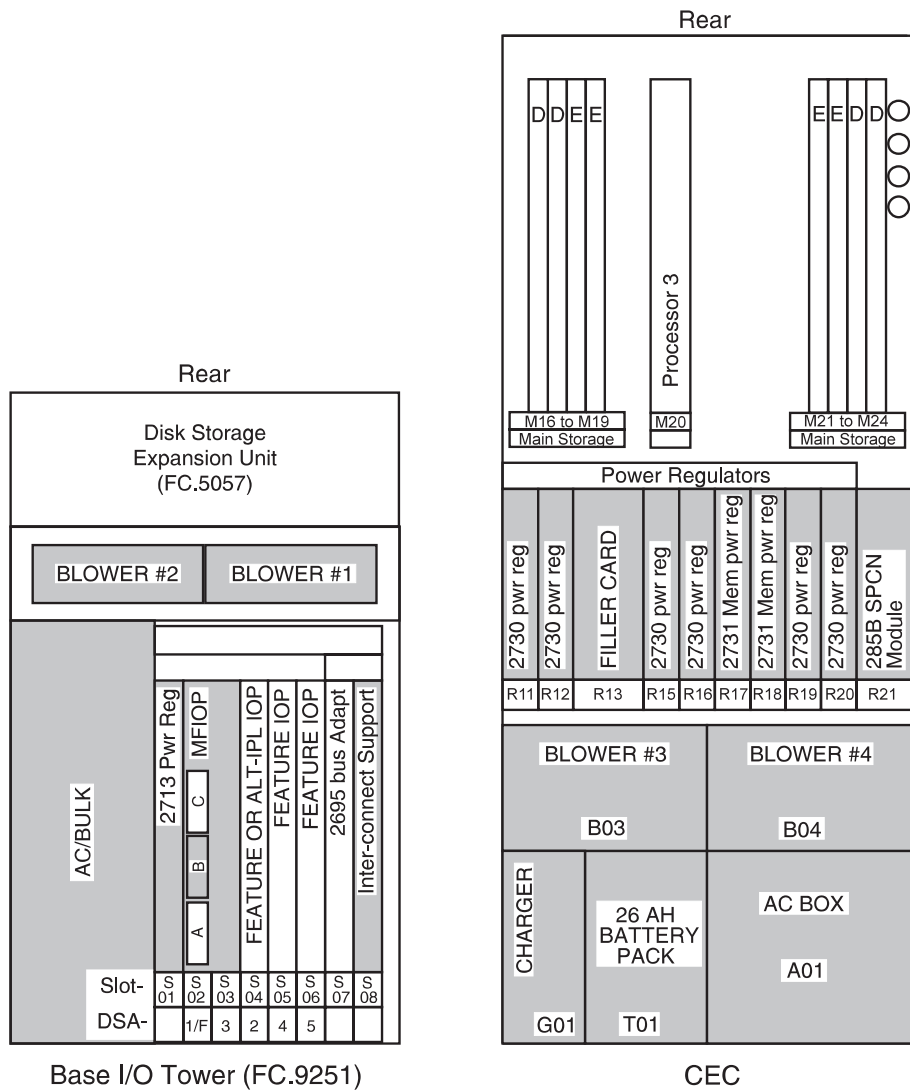


KEY:  - Base System



RZAAC507-0

Figure 74. Model 650 Front View — FC 2188, FC 2189 ('N' Processor)



KEY: - Base System

RV4D169-3

Figure 75. Model 650 Rear View — FC 2240, FC 2243 ('A' Processor)

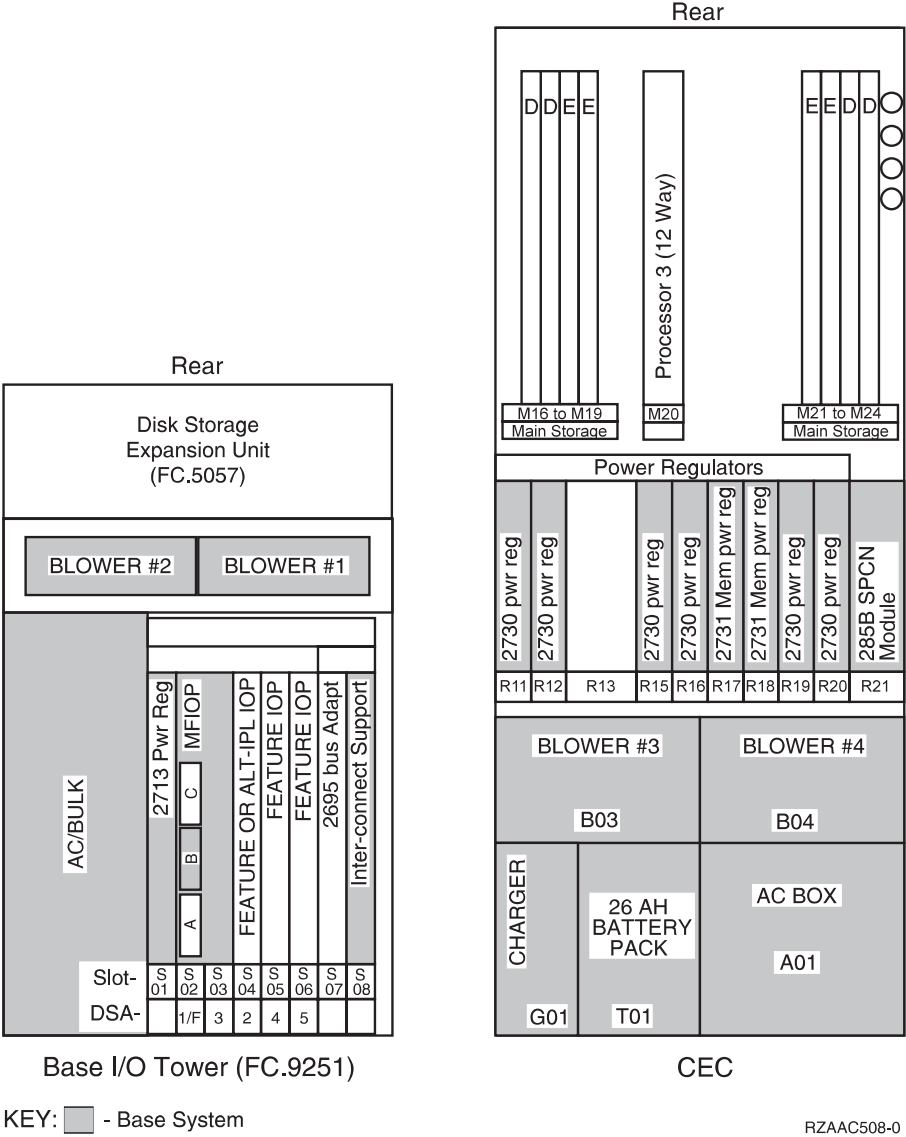


Figure 76. Model 650 Rear View — FC 2188, FC 2189 ('N' Processor)

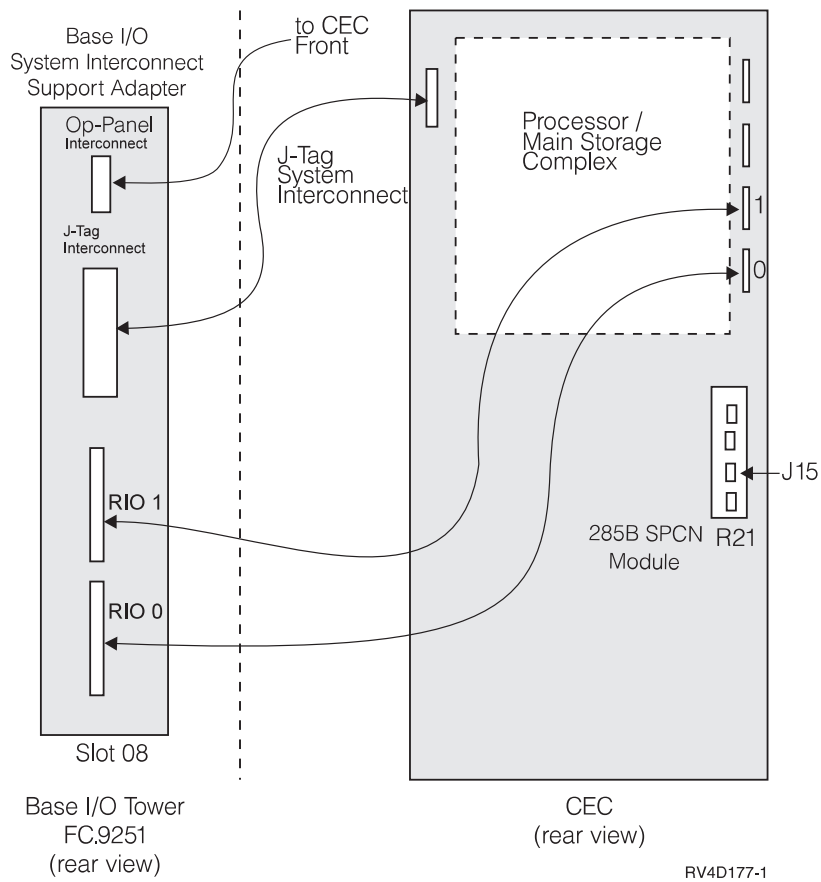


Figure 77. Model 650 - System Interconnect Cabling

**Note:** Op-Panel cable connects to CEC Frame behind the Op-Panel.

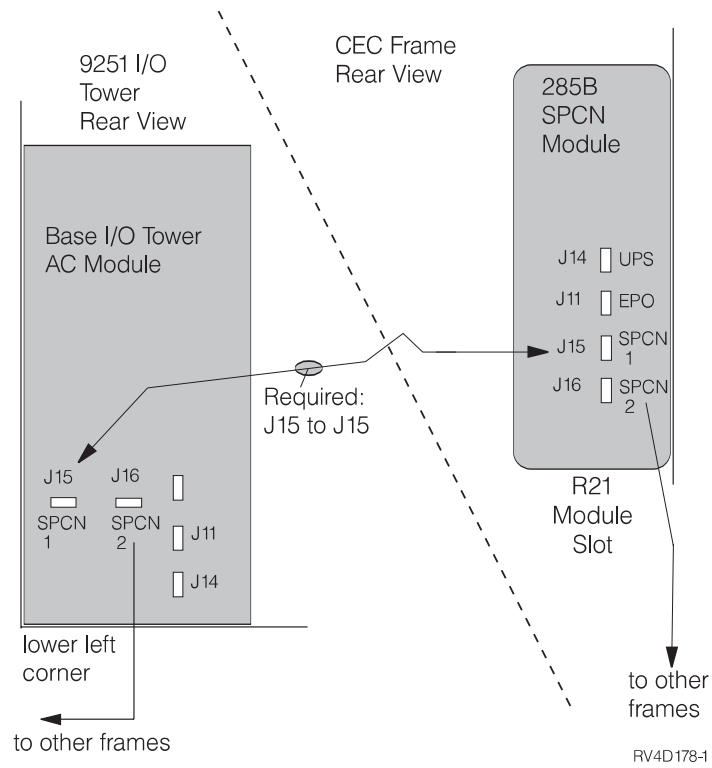


Figure 78. Model 650 - CEC to Base I/O Tower SPCN

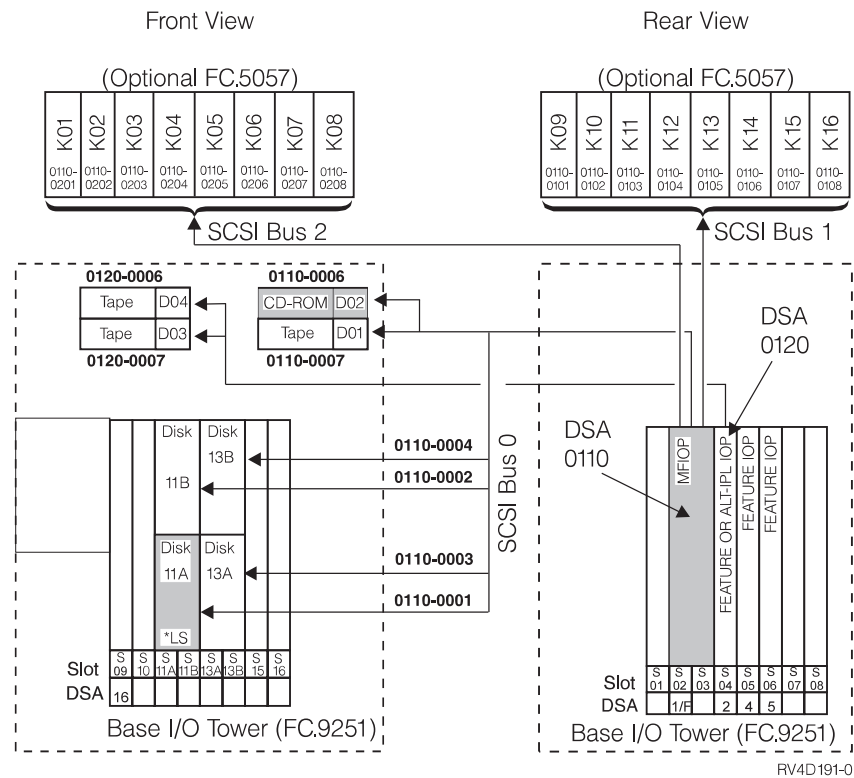


Figure 79. Model 650 - Disk Addressing for I/O Tower

## Model 650 - Processor and Main Storage Features:

Table 61. Model 650 Processor and Main Storage Features

Card/Feature	FC 2240	FC 2188	FC 2243	FC 2189
Number of Processors	8	8	12	12
Base Bus Adapter (CCIN)	2696	2696	2696	2696
Expansion Bus Adapter (CCIN)	2695	2695	2695	2695
Main Storage Organization	Card Quads (4 X cards)	Card Quads (4 X cards)	Card Quads (4 X cards)	Card Quads (4 X cards)
Base Main Storage	1GB (4-FC 9179)	1GB (4-FC 9179)	1GB (4-FC 9179)	1GB (4-FC 9179)
Max Main Storage	32GB	40GB	32GB	40GB
128MB Main Storage Card (FC)	3189	3189	3189	3189
256MB Main Storage Card (FC)	3179 / 3190	3179 / 3190	3179 / 3190	3179 / 3190
512MB Main Storage Card (FC)	3180 / 3191	3180 / 3191	3180 / 3191	3180 / 3191
1024MB Main Storage Card (FC)	3192	3192	3192	3192
2048MB Main Storage Card (FC)	3193	3193	3193	3193
Clock Card (CCIN)	25A9	25A9	25A9	25A9

## Model 650 — Base System Features:

Table 62. Model 650 —Base System Features

Base Feature	Location	Description
Load Source disk	L01	<ul style="list-style-type: none"><li>• 9907 (4.19GB; CCIN 6607)</li><li>• 8713 (8.58GB; CCIN 6713)</li><li>• 8714 (17.54GB; CCIN 6714)</li></ul>
MFIOF	S01/S02	<ul style="list-style-type: none"><li>• 9751 (V4R1)</li><li>• 9754 (V4R2)</li></ul>
Twinax Console	MFIOF IOA Position C	<ul style="list-style-type: none"><li>• 9280 (6180 —Twinax)</li></ul>
Client Access Comm Console	MFIOF IOA Position B	<ul style="list-style-type: none"><li>• 9699 (2699—2 port Comm)</li><li>• with FC 0344 cable</li></ul>
Operations Console	MFIOF IOA Position B	<ul style="list-style-type: none"><li>• 9699 (2699 - Comm)</li><li>• with FC 0348 cable</li><li>• optional Remote Control Panel cable FC 0380 connects to MI port (J19)</li></ul>
ASCII Console	SPD IOP feature slot	<ul style="list-style-type: none"><li>• 9141 (6141— ASCII WSC)</li></ul>
ECS	MFIOF IOA position B	<ul style="list-style-type: none"><li>• 9699 - (2699—2 port comm)</li></ul>

## Model 650 - Power and Battery Features:

Table 63. Model 650 - Power and Battery Features

Power Feature	Description	Details
CCIN.2730	Programmable Power Regulator	<ul style="list-style-type: none"> <li>Required when more than 4 main storage cards are installed.</li> <li>See Table 64 for placement.</li> </ul>
FC 5150	External Battery Backup	<ul style="list-style-type: none"> <li>Connects to J3</li> <li>Expands CPM time to 48 hours</li> <li>Cannot be mounted under floor or on a tower</li> <li>Maximized battery life is obtained when the FC 5150 is maintained at the same ambient temperature as the CEC frame.</li> <li>Required when more than 4 main storage cards are installed.</li> </ul>

Table 64. Model 650 Power Regulator Slot Content by Processor Feature

Proc FC	Type	Mem Slots	Bulk Pwr	Front					Rear									
				R01	R02	R03	R04	R05 to R09	R10	R11	R12	R13	R15	R16	R17	R18	R19	R20
2240	A (8w)	all	P01 - P05	PR					PR	PR	PR	n/u	PR	PR	MC	MC	PR	PR
2188	N (8w)	all	P01 - P05			PR	PR			PR	PR		PR	PR	MC	MC	PR	PR
2243	A (12w)	all	P01 - P06	PR		PR			PR	PR	PR	n/u	PR	PR	MC	MC	PR	PR
2189	N (12w)	all	P01 - P06			PR	PR	PR		PR	PR		PR	PR	MC	MC	PR	PR
<b>Note:</b> <ul style="list-style-type: none"> <li><b>PR</b>— Programmable Regulator, CCIN.2730</li> <li><b>MC</b>— Memory Controller, CCIN.2731</li> </ul>																		

## Model 650 - Feature Install Restrictions:

- FC 6616 Integrated Netfinity Server must use either slots 4 and 5, or slots 5 and 6 in the I/O tower.
- FC 6617 Integrated Netfinity Server, if installed in the base I/O tower, it must install in slots 4– 6.
- You must have 2 RIO cables when any FC 2695 bus adapter is installed.
- The install sequence for FC 2695 bus adapters is: slot 7, then slot 10.

## Model 650 Summary:

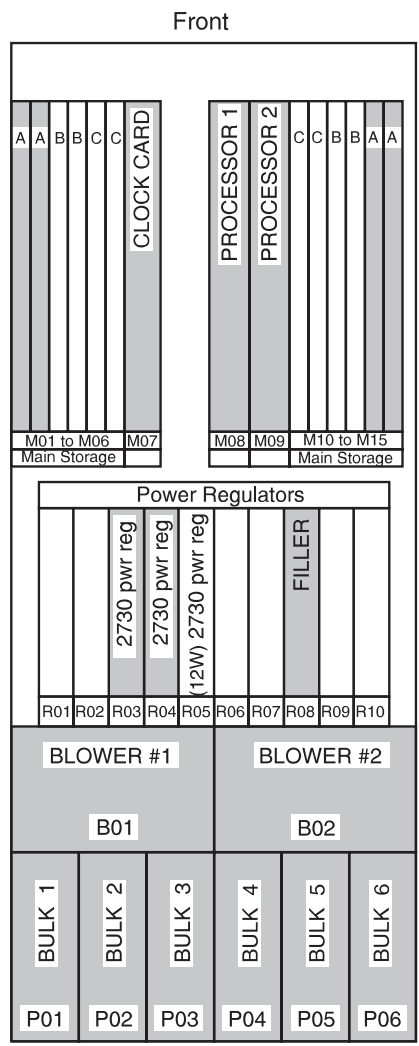
Table 65. Model 650 Summary

Description/Function	FC 2240	FC 2188	FC 2243	FC 2189
Main Storage (GB) Min/Max <sup>1</sup>	1 - 20	1 - 20	1 - 20	1 - 20
Physical Disk Unit Capacity (GB)				

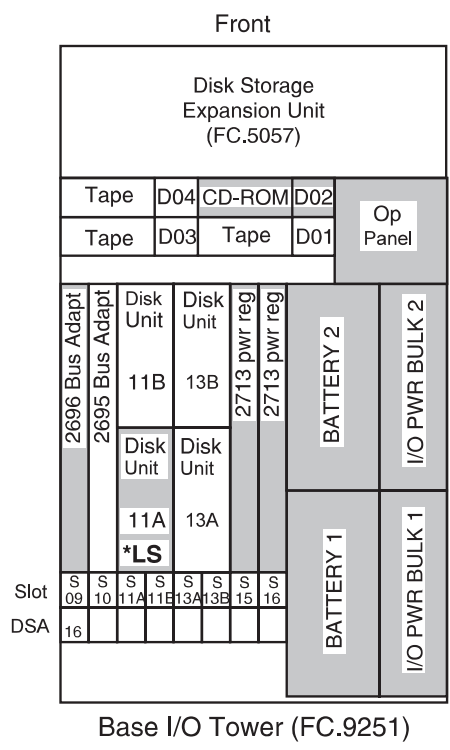
Table 65. Model 650 Summary (continued)

Description/Function	FC 2240	FC 2188	FC 2243	FC 2189
Base	4.19	4.19	4.19	4.19
Maximum Internal (180 X 8.58)	2096	2096	2096	2096
Maximum External (22 X 68.71)	2061	2061	2061	2061
Total System	2096	2096	2096	2096
Int/Ext disk unit IOPs <sup>2</sup>	1-37	1-37	1-37	1-37
Diskette (8 or 5.25 inch)	0-2	0-2	0-2	0-2
Tape Attachment				
1/4-inch or 8mm (or both) <sup>3</sup>	0-17	0-17	0-17	0-17
8mm Cartridge, 9427 <sup>4</sup>	0-4	0-4	0-4	0-4
1/2-inch Reel 2440, 9348 <sup>4</sup>	0-4	0-4	0-4	0-4
3490, 3590, 3570	0-8	0-8	0-8	0-8
9347	0-2	0-2	0-2	0-2
Physical Packaging				
SPD I/O Bus	1-19	1-19	1-19	1-19
I/O Card Slots	3-237	3-237	3-237	3-237
System Expansion (FC 507x/508x)	0-18	0-18	0-18	0-18
Bus Expansion (FC 5044)	0-9	0-9	0-9	0-9
Storage Expansion (FC 5057)	0-1	0-1	0-1	0-1
Storage Expansion (FC 5052/FC 5058)	0-18	0-18	0-18	0-18
Workstation Attachment				
Controllers Min/Max	1-175	1-175	1-175	1-175
TWINAX Devices	7000	7000	7000	7000
ASCII Devices	3150	3150	3150	3150
Communications Lines	1-300	1-300	1-300	1-300
FAX IOPs (2 lines/IOP)	0-32	0-32	0-32	0-32
Cryptographic	0-1	0-1	0-1	0-1
LAN Ports (16 Integrated Netfinity Servers maximum)	0-72	0-72	0-72	0-72
Optical Libraries	0-22	0-22	0-22	0-22
<b>Note:</b> 1. Must replace base memory to reach maximums. 2. This includes FC 975x MFIOP. 3. This is the combined quantity of internal tapes. 4. Maximum of 4 tape drives and libraries; may be any combination of 2440, 7208 or 9348s. Each 9427 is counted as either 1 or 2 7208s.				

Model 740

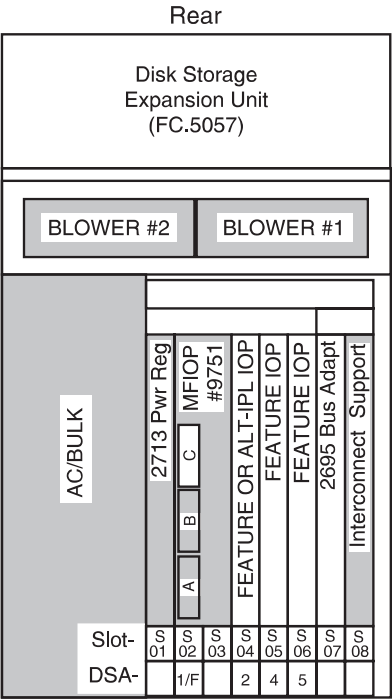


KEY: - Base System



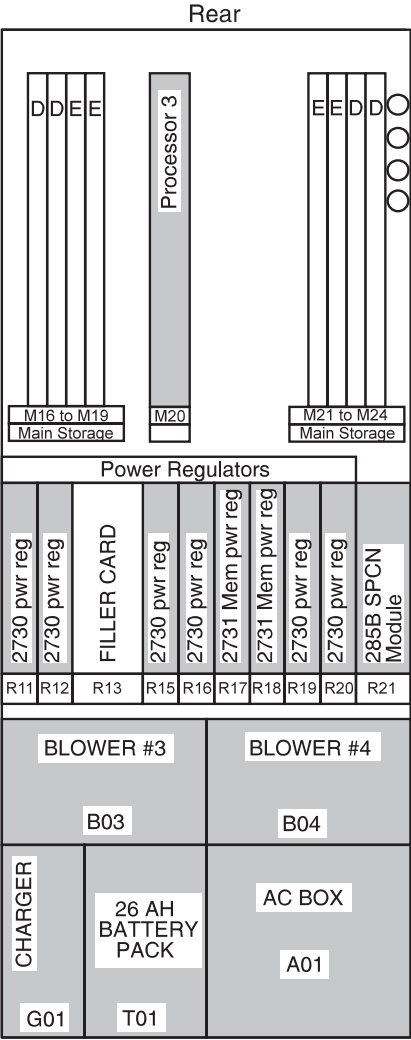
RZAAC511-0

Figure 80. Model 740 Front View



Base I/O Tower (FC.9251)

KEY: - Base System



CEC

RV4D175-3

Figure 81. Model 740 Rear View

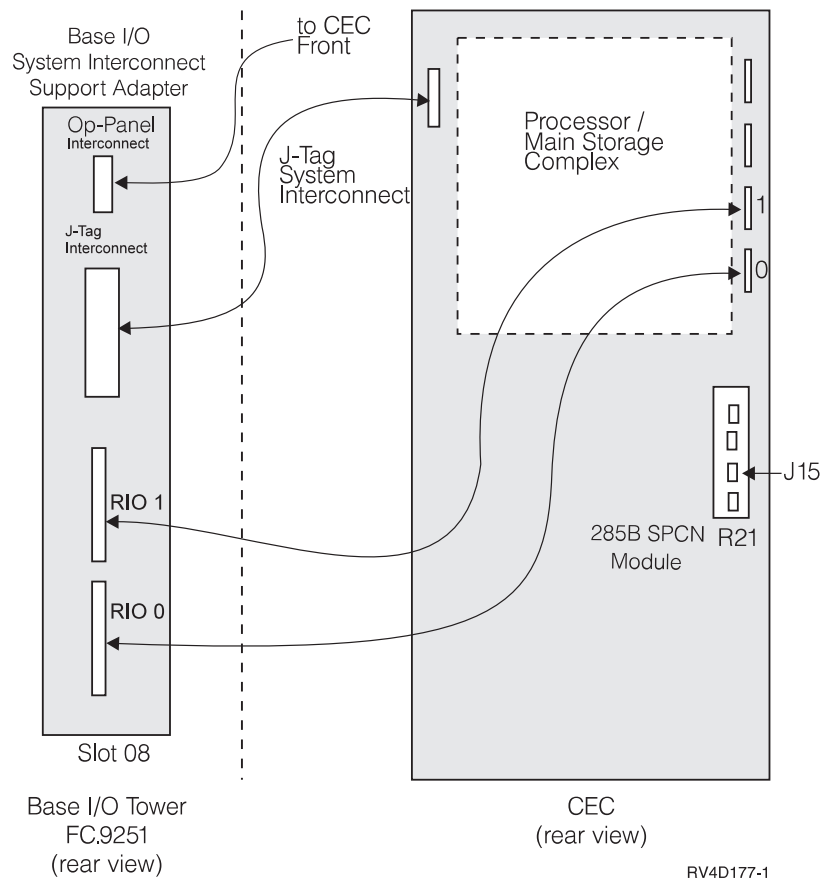


Figure 82. Model 740 - System Interconnect Cabling.

- Install 2 RIO cables.

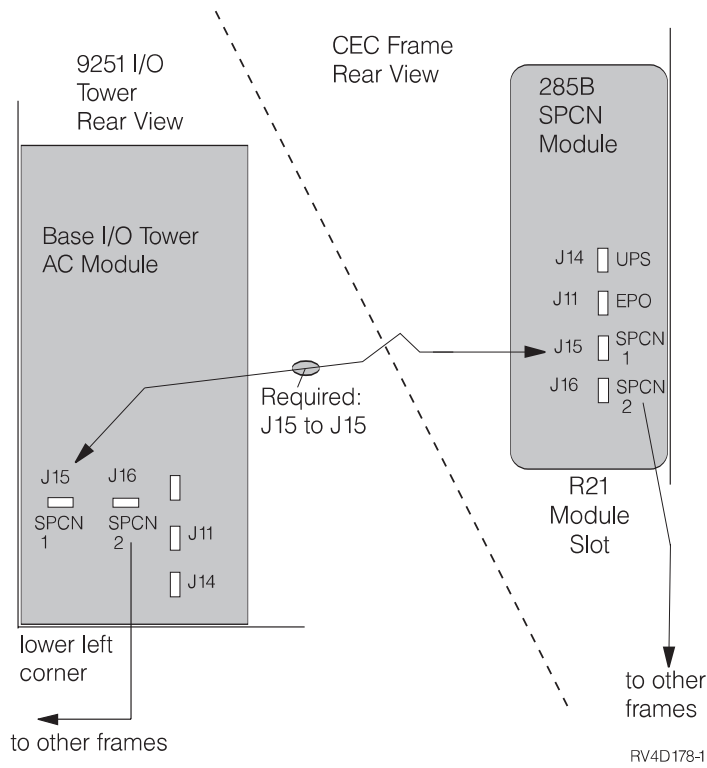


Figure 83. Model 740 - CEC to Base I/O Tower SPCN

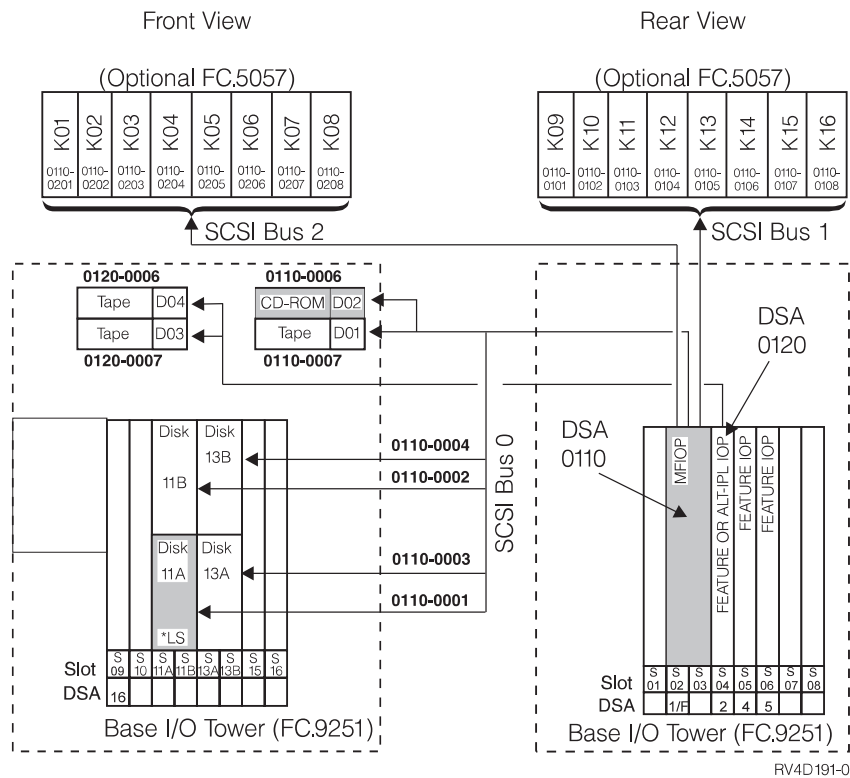


Figure 84. Model 740 - Disk Addressing for I/O Tower

## Model 740 - Processor and Main Storage Features:

Table 66. Model 740 Processor and Main Storage Features

Card/Feature	2069	2070
Number of Processors	8	12
Base Bus Adapter (CCIN)	2696	2696
Expansion Bus Adapter (CCIN)	2695	2695
Main Storage Organization	Card Quads (4 x cards)	Card Quads (4 x cards)
Base Main Storage	1GB (4 x FC 9179)	1GB (4 x FC 9179)
Max Main Storage	40GB	40GB
128MB Main Storage Card (FC)	3189	3189
256MB Main Storage Card (FC)	3179 / 3190	3179 / 3190
512MB Main Storage Card (FC)	3180 / 3191	3180 / 3191
1024MB Main Storage Card (FC)	3192	3192
2048MB Main Storage Card (FC)	3193	3193
Clock Card (CCIN)	25A9	25A9

Table 67. Model 740 — Processor Locations

Feature Code	Location M08	Location M09	Location M20
2069	241A	241B	Airflow
1514	2A6D	2208	
1512	2A6C	2208	
1511	2A6B	2208	
1510	2A6A	2208	
2070	241A	241B	241A
1514	2D6B	2208	2207
1513	2E6E	2208	2207
1512	2D6E	2208	2207
1511	2D6D	2208	2207
1510	2D6C	2208	2207

## Model 740 — Base System Features:

Table 68. Model 740 —Base System Features

Base Feature	Location	Description
Load Source disk	L01	<ul style="list-style-type: none"> <li>• 9907 (4.19GB; CCIN 6607)</li> <li>• 8713 (8.58GB; CCIN 6713)</li> <li>• 8714 (17.54GB; CCIN 6714)</li> </ul>
MFIOP	S01/S02	<ul style="list-style-type: none"> <li>• 9754 (MFIOP)</li> </ul>
Twinax Console	MFIOP IOA Position C	<ul style="list-style-type: none"> <li>• 9280 (6180 - Twinax)</li> </ul>
Client Access Comm Console	MFIOP IOA Position B	<ul style="list-style-type: none"> <li>• 9699 (2699 - 2 port Comm)</li> <li>• with FC 0344 cable</li> </ul>
Operations Console	MFIOP IOA Position B	<ul style="list-style-type: none"> <li>• 9699 (2699 - 2 port Comm)</li> <li>• with FC 0328 cable</li> </ul>
ASCII Console	SPD IOP feature slot	<ul style="list-style-type: none"> <li>• 9141 (6141 ASCII WSC)</li> </ul>

Table 68. Model 740 —Base System Features (continued)

Base Feature	Location	Description
ECS	MFIOF IOA position B	• 9699 - (2699 - 2 port comm)
Base Lan - FDDI	SPD IOP feature slot	• 8664 (2618 FDDI )
Base Lan - Token Ring	SPD IOA feature, hosts: MFIOF, FC 6616, FC 2629	• 9249 (6149 Token Ring )
Base Lan - Ethernet	SPD IOA feature, hosts: MFIOF, FC 6616, FC 2629	• 9381 (6181 Ethernet )
Base Lan - HS 10 /100 Ethernet	PCI IOA feature, host: FC 2810	• 9738 (2838 10/100 HS Ethernet)

### Model 740 - Power and Battery Features:

Table 69. Model 740 Processor and Battery Features

Power Feature	Description	Details
CCIN.2730	Programmable Power Regulator	<ul style="list-style-type: none"> <li>Required when more than 4 main storage cards are installed.</li> <li>See Table 70 for installation information.</li> </ul>
5150	External Battery Backup	<ul style="list-style-type: none"> <li>Connects to J3</li> <li>Expands CPM time to 48 hours</li> <li>Cannot be mounted under floor or on a tower</li> <li>Maximized battery life is obtained when the FC 5150 is maintained at the same ambient temperature as the CEC frame.</li> <li>Required when main storage size exceeds 16GB.</li> </ul>

Table 70. Model 740 Power Regulator Slot Content by Processor Feature

Proc FC	Type	Mem	Bulk Power	Front					Rear								
				R 0 1	R 0 2	R03 and R04	R 0 5	R06 to R10	R 1 1	R 1 2	R13 and R14	R 1 5	R 1 6	R 1 7	R 1 8	R 1 9	R 2 0
2069	N (8w)	all	P01 - P05			PR			PR	PR		PR	PR	MC	MC	PR	PR
2070	N (12w)	all	P01 - P06			PR	PR		PR	PR		PR	PR	MC	MC	PR	PR
<b>Note:</b> <ul style="list-style-type: none"><li>• <b>PR</b>— Programmable Regulator, CCIN.2730</li><li>• <b>MC</b>— Memory Controller, CCIN.2731</li><li>• n/u - not used</li></ul>																	

### Model 740 - Feature Install Restrictions:

- FC 6616 Integrated Netfinity Server cannot install in the base I/O tower slot 6. Double — width IOPs must install in base I/O tower slots 4 and 5 or 5 and 6.
- FC 6617/6618 Integrated Netfinity Server requires 3 slots. If installed in base I/O tower, it must install in Slot 4 — 6.

- 2 RIO cables required when any FC 2695 bus adapter is installed.
- The install sequence for FC 2695 Bus Adapters is: slot 7, then slot 10.

#### Model 740 Summary:

Table 71. Model 740 Summary

Description	FC 2069	FC 2070
Main Storage (GB) Min/Max (1)	1 - 40	1 - 40
Physical Disk Unit Capacity (GB)		
Base	4.19	4.19
Maximum Internal (180 X 8.58)	4295	4295
Maximum External (22 X 68.71)	4260	4260
Total System	4295	4295
Int/Ext disk unit IOPs (2)	1-37	1-37
Diskette (8 or 5.25 inch)	0-2	0-2
Tape Attachment		
1/4-inch and/or 8mm (3)	0-17	0-17
8mm Cartridge, 9427 (4)	0-4	0-4
1/2-inch Reel: 2440, 9348 (4)	0-4	0-4
3490, 3590, 3570 tape units	0-8	0-8
9347 tape unit	0-2	0-2
Physical Packaging		
I/O Bus	1-19	1-19
I/O Card Slots (PCI)	0-216	0-216
I/O Card Slots (SPD)	3-237	3-237
I/O Expansion (FC 5065/507x/508x)	0-18	0-18
Storage Expansion (FC 5057)	0-1	0-1
Storage Expansion Units (FC 5052, FC 5058)	0-18	0-18
Rack Expansion (FC 5044)	0-9	0-9
Workstation Attachment		
Controllers (min-max)	1-175	1-175
Twinax Devices (5)	1-7000	1-7000
ASCII Devices (5)	1-3150	1-3150
Communications Lines	1-300	1-300
FAX IOPs (2 lines/IOP)	0-32	0-32
Cryptographic	0-1	0-1
LAN Ports (16 Integrated Netfinity Server IOPs max)	1-72	1-72
Optical Libraries	0-22	0-22
<b>Note:</b> <ol style="list-style-type: none"> <li>1. Must replace base memory to reach maximums.</li> <li>2. Total includes FC 975x MFIOp.</li> <li>3. This is the combined quantity of internal tapes.</li> <li>4. Maximum of 4 tape drives and libraries; may be any combination of 2440, 7208 or 9348s. Each 9427 is counted as either 1 or 2 7208s.</li> </ol>		

Model S40

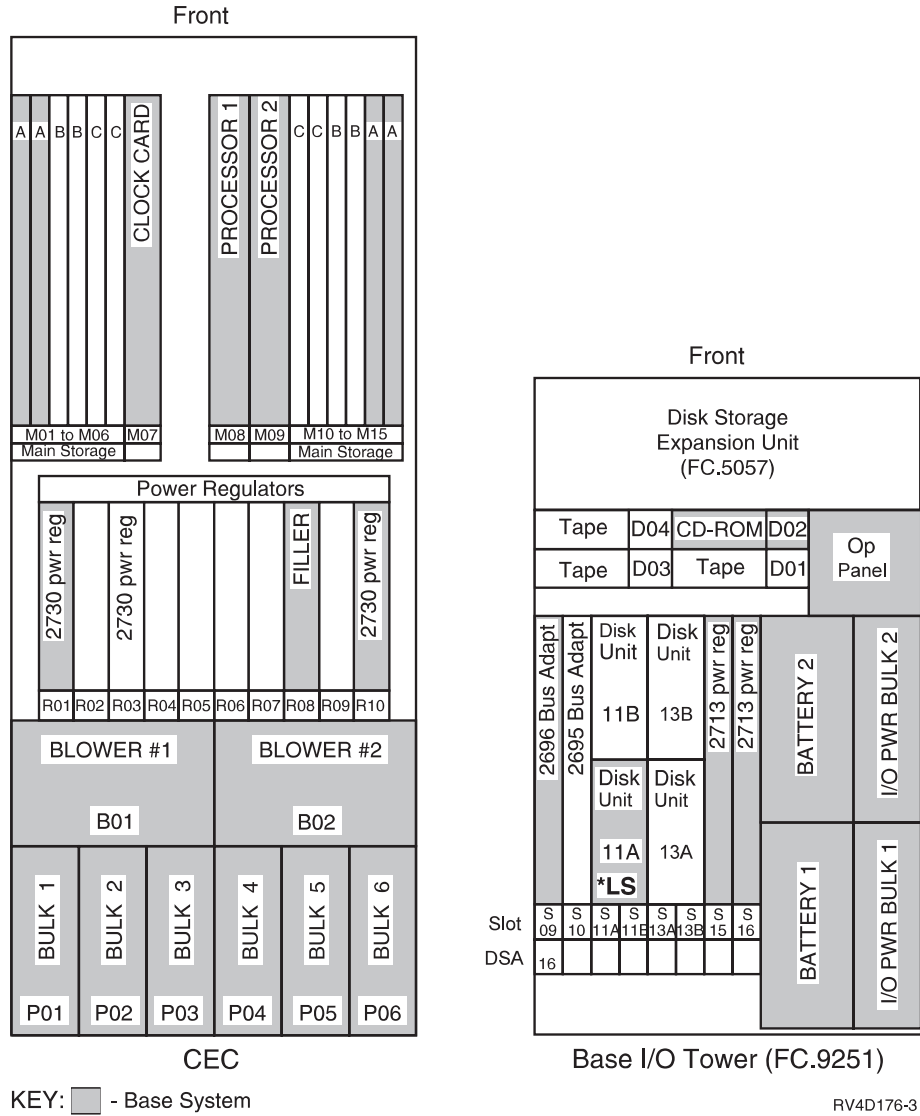


Figure 85. Model S40 Front View (type 'A' processors)

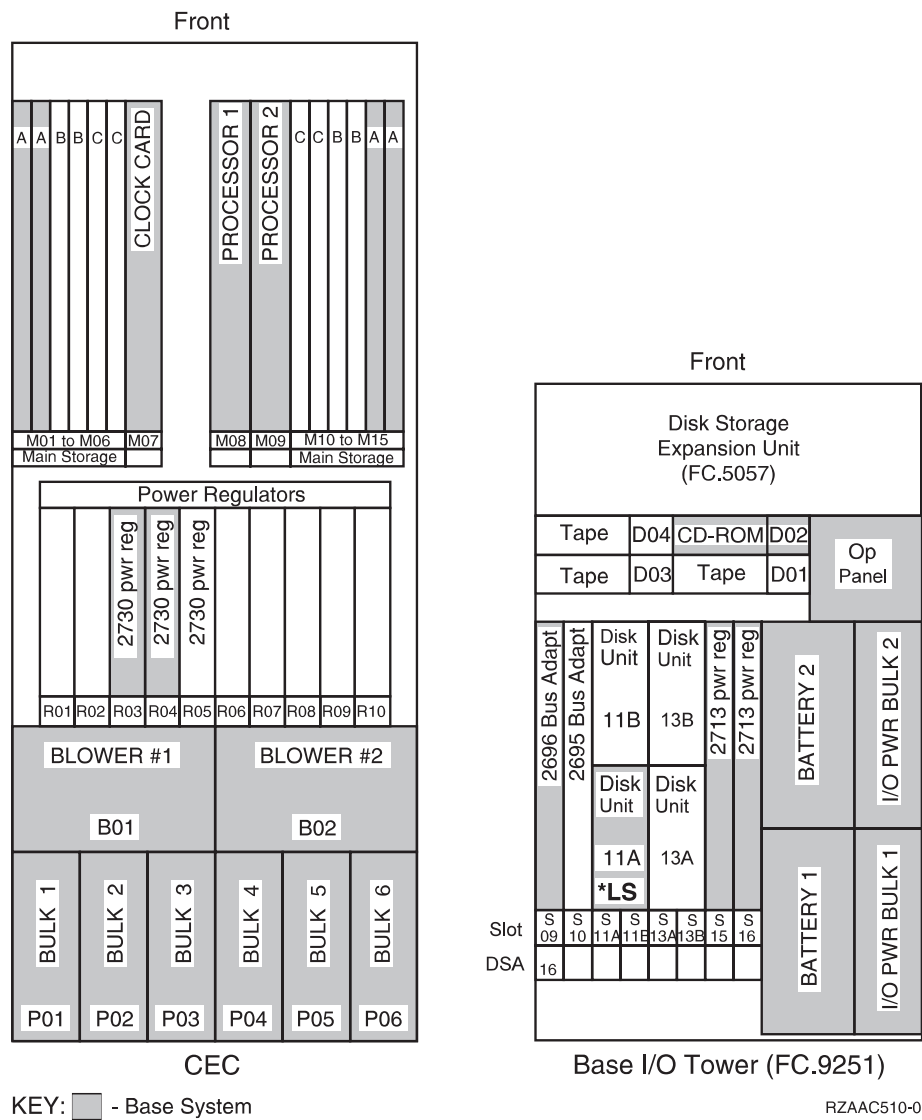
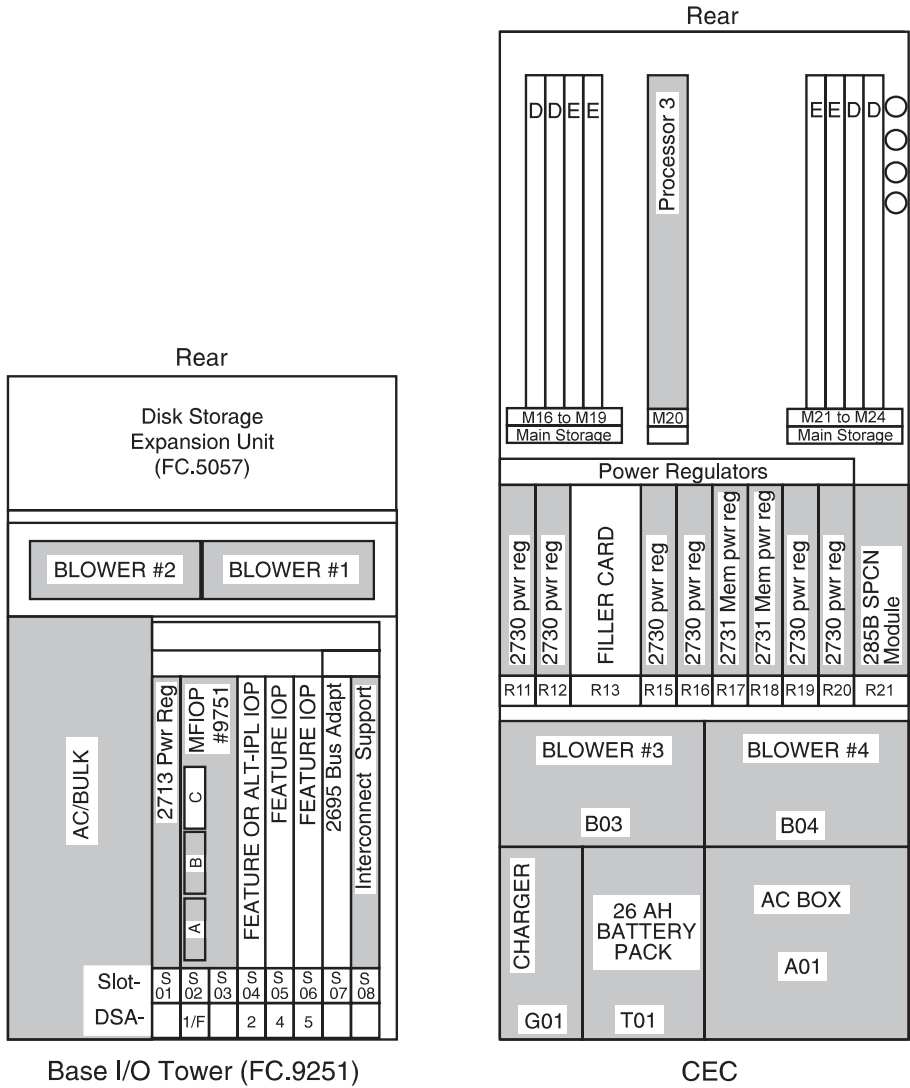


Figure 86. Model S40 Front View — FC 2207, FC 2208, FC 2341 (type 'N' processors)



KEY: - Base System

RV4D175-3

Figure 87. Model S40 Rear View (type 'A' and type 'N' processors)

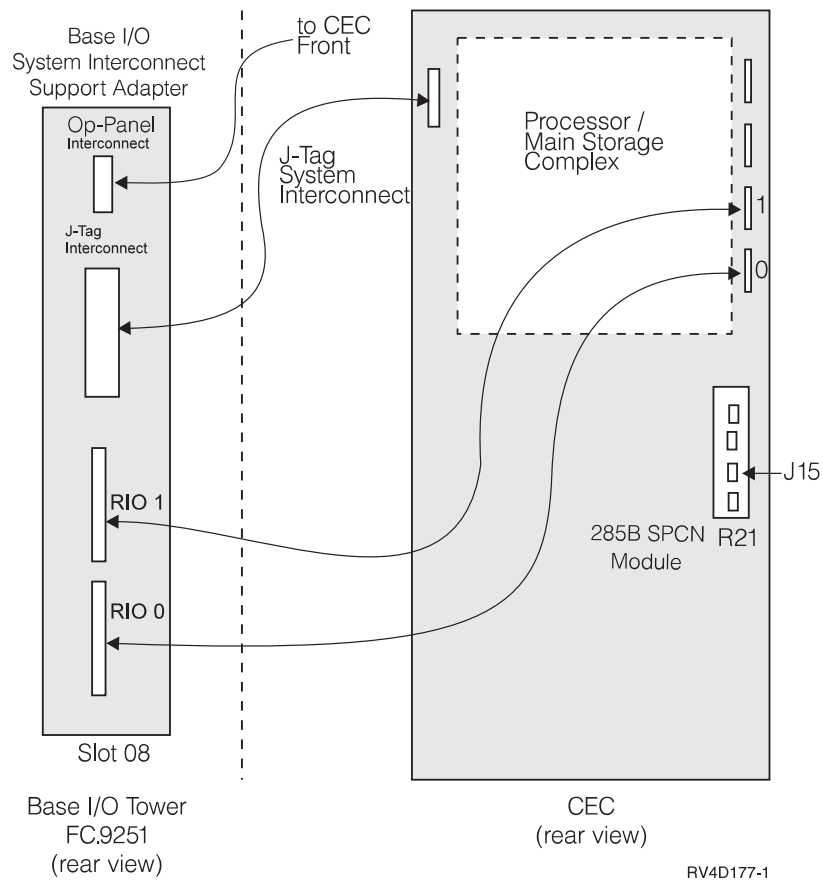


Figure 88. Model S40 - System Interconnect Cabling.

- Install 2 RIO cables.

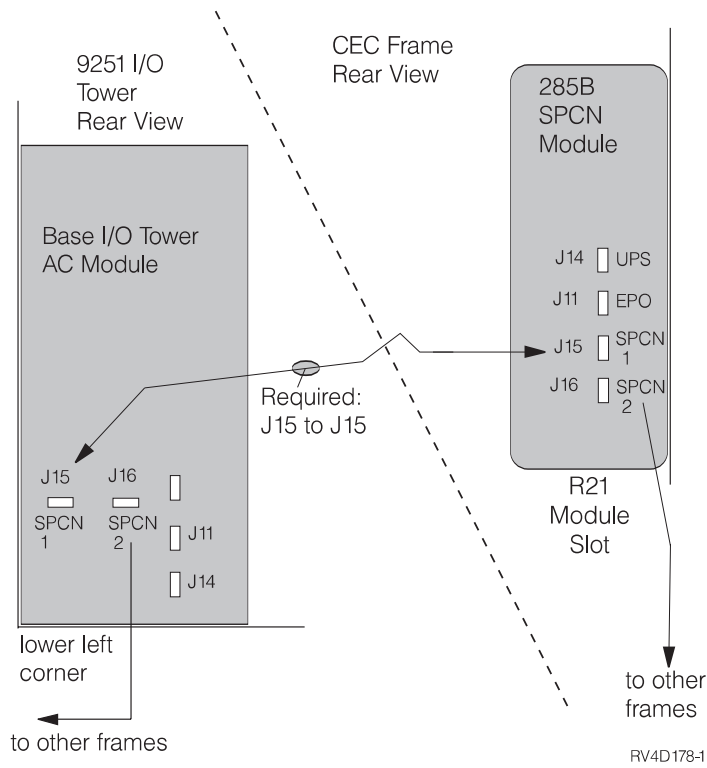


Figure 89. Model S40 - CEC to Base I/O Tower SPCN

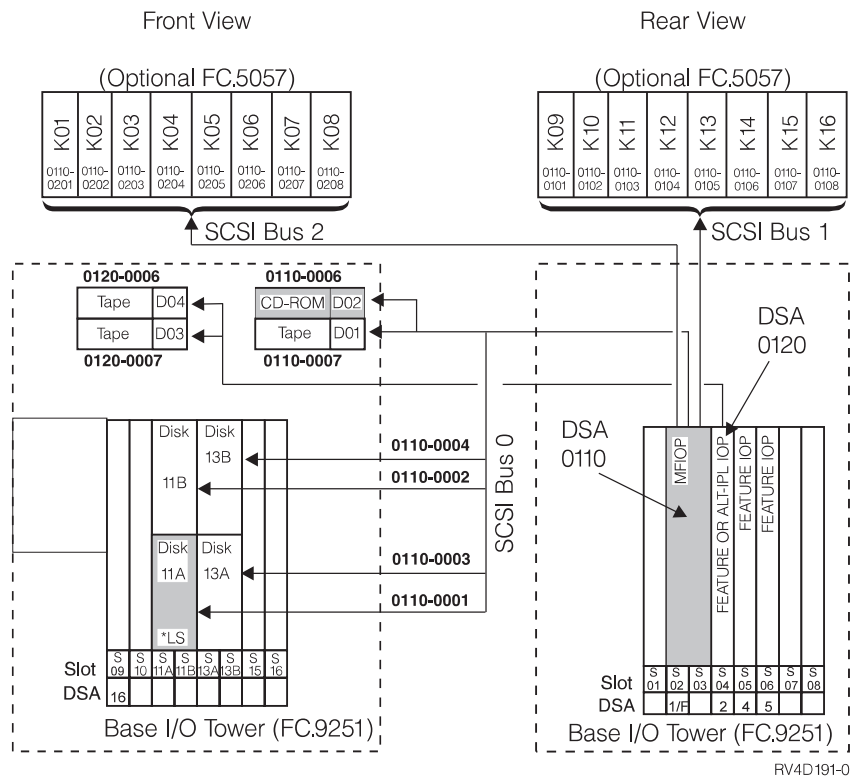


Figure 90. Model S40 - Disk Addressing for I/O Tower

## Model S40 - Processor and Main Storage Features:

Table 72. Model S40 Processor and Main Storage Features

Card/Feature	FC 2256	FC 2207, FC 2340	FC 2261	FC 2208
Number of Processors	8	8	12	12
Base Bus Adapter (CCIN)	2696	2696	2696	2696
Expansion Bus Adapter (CCIN)	2695	2695	2695	2695
Main Storage Organization	Card Quads (4 x cards)	Card Quads (4 x cards)	Card Quads (4 x cards)	Card Quads (4 x cards)
Base Main Storage	1GB (4 x FC 9179)	1GB (4 x FC 9179)	1GB (4 x FC 9179)	1GB (4 x FC 9179)
Max Main Storage	32GB	40GB	32GB	40GB
128MB Main Storage Card (FC)	3189	3189	3189	3189
256MB Main Storage Card (FC)	3179 / 3190	3179 / 3190	3179 / 3190	3179 / 3190
512MB Main Storage Card (FC)	3180 / 3191	3180 / 3191	3180 / 3191	3180 / 3191
1024MB Main Storage Card (FC)	3192	3192	3192	3192
2048MB Main Storage Card (FC)	3193	3193	3193	3193
Clock Card (CCIN)	25A9	25A9	25A9	25A9

## Model S40 — Base System Features:

Table 73. Model S40 —Base System Features

Base Feature	Location	Description
Load Source disk	L01	<ul style="list-style-type: none"> <li>• 9907 (4.19GB; CCIN 6607)</li> <li>• 8713 (8.58GB; CCIN 6713)</li> <li>• 8714 (17.54GB; CCIN 6714)</li> </ul>
MFIOF	S01/S02	<ul style="list-style-type: none"> <li>• 9754 (MFIOF)</li> </ul>
Twinax Console	MFIOF IOA Position C	<ul style="list-style-type: none"> <li>• 9280 (6180 - Twinax)</li> </ul>
Client Access Comm Console	MFIOF IOA Position B	<ul style="list-style-type: none"> <li>• 9699 (2699 - 2 port Comm)</li> <li>• with FC 0344 cable</li> </ul>
Operations Console	MFIOF IOA Position B	<ul style="list-style-type: none"> <li>• 9699 (2699 - 2 port Comm)</li> <li>• with FC 0328 cable</li> </ul>
ASCII Console	SPD IOP feature slot	<ul style="list-style-type: none"> <li>• 9141 (6141 ASCII WSC)</li> </ul>
ECS	MFIOF IOA position B	<ul style="list-style-type: none"> <li>• 9699 - (2699 - 2 port comm)</li> </ul>
Base Lan - FDDI	SPD IOP feature slot	<ul style="list-style-type: none"> <li>• 8664 (2618 FDDI )</li> </ul>
Base Lan - Token Ring	SPD IOA feature, hosts: MFIOF, FC 6616, FC 2629	<ul style="list-style-type: none"> <li>• 9249 (6149 Token Ring )</li> </ul>

Table 73. Model S40 —Base System Features (continued)

Base Feature	Location	Description
Base Lan - Ethernet	SPD IOA feature, hosts: MFIOF, FC 6616, FC 2629	• 9381 (6181 Ethernet )
Base Lan - HS 10 /100 Ethernet	PCI IOA feature, host: FC 2810	• 9738 (2838 10/100 HS Ethernet)

### Model S40 - Power and Battery Features:

Table 74. S40 Processor and Battery Features

Power Feature	Description	Details
CCIN.2730	Programmable Power Regulator	<ul style="list-style-type: none"> <li>Required when more than 4 main storage cards are installed.</li> <li>See Table 75 for installation information.</li> </ul>
5150	External Battery Backup	<ul style="list-style-type: none"> <li>Connects to J3</li> <li>Expands CPM time to 48 hours</li> <li>Cannot be mounted under floor or on a tower</li> <li>Maximized battery life is obtained when the FC 5150 is maintained at the same ambient temperature as the CEC frame.</li> <li>Required when main storage size exceeds 16GB.</li> </ul>

Table 75. Model S40 Power Regulator Slot Content by Processor Feature

Proc FC	Type	Mem Slots	Bulk Power	Front								Rear							
				R 0 1	R 0 2	R 0 3	R 0 4	R 0 5	R06 to R09	R 1 0	R 1 1	R 1 2	R 1 3	R 1 5	R 1 6	R 1 7	R 1 8	R 1 9	R 2 0
2256	A (8w)	all	P01 - P05	PR						PR	PR	PR	n/u	PR	PR	MC	MC	PR	PR
2207 2340	N (8w)	all	P01 - P05			PR	PR				PR	PR	n/u	PR	PR	MC	MC	PR	PR
2261	A (12w)	all	P01 - P06	PR		PR				PR	PR	PR	n/u	PR	PR	MC	MC	PR	PR
2208 2341	N (12w)	all	P01 - P06			PR	PR	PR			PR	PR	n/u	PR	PR	MC	MC	PR	PR
<b>Note:</b> <ul style="list-style-type: none"> <li><b>PR</b>— Programmable Regulator, CCIN.2730</li> <li><b>MC</b>— Memory Controller, CCIN.2731</li> <li>n/u - not used</li> </ul>																			

### Model S40 - Feature Install Restrictions:

- FC 6616 Integrated Netfinity Server cannot install in the base I/O tower slot 6. Double — width IOPs must install in base I/O tower slots 4 and 5 or 5 and 6.
- FC 6617 Integrated Netfinity Server requires 3 slots. If installed in base I/O tower, it must install in Slot 4 — 6.
- 2 RIO cables required when any FC 2695 bus adapter is installed.

- The install sequence for FC 2695 Bus Adapters is: slot 7, then slot 10.

#### Model S40 Summary:

Table 76. Model S40 Summary

Description	FC 2256	FC 2207, FC 2380	FC 2261	FC 2208 FC 2341
Main Storage (GB) Min/Max (1)	1 - 32	1 - 40	1 - 32	1 - 40
Physical Disk Unit Capacity (GB)				
Base	4.19	4.19	4.19	4.19
Maximum Internal (180 X 8.58)	2096	2096	2096	2096
Maximum External (22 X 68.71)	2061	2061	2061	2061
Total System	2096	2096	2096	2096
Int/Ext disk unit IOPs (2)	1-37	1-37	1-37	1-37
Diskette (8 or 5.25 inch)	0-2	0-2	0-2	0-2
Tape Attachment				
1/4-inch and/or 8mm (3)	0-17	0-17	0-17	0-17
8mm Cartridge, 9427 (4)	0-4	0-4	0-4	0-4
1/2-inch Reel: 2440, 9348 (4)	0-4	0-4	0-4	0-4
3490, 3590, 3570 tape units	0-8	0-8	0-8	0-8
Physical Packaging				
SPD I/O Bus	1-19	1-19	1-19	1-19
I/O Card Slots	3-237	3-237	3-237	3-237
System Expansion (FC 507x/508x)	0-18	0-18	0-18	0-18
Storage Expansion (FC 5057)	0-1	0-1	0-1	0-1
Storage Expansion Units (FC 5052, FC 5058)	0-18	0-18	0-18	0-18
Workstation Attachment				
Controllers (min-max)	1-3	1-3	1-3	1-3
Twinax Controllers	1	1	1	1
Twinax Devices (5)	28	28	28	28
ASCII Controllers	2	2	2	2
ASCII Devices (5)	28	28	28	28
Communications Lines	1-300	1-300	1-300	1-300
FAX IOPs (2 lines/IOP)	0-32	0-32	0-32	0-32
Cryptographic	0-1	0-1	0-1	0-1
LAN Ports (16 Integrated Netfinity Server IOPs max)	1-72	1-72	1-72	1-72
Optical Libraries	0-22	0-22	0-22	0-22
<b>Note:</b> <ol style="list-style-type: none"> <li>1. Must replace base memory to reach maximums.</li> <li>2. Total includes FC 975x MFIOP.</li> <li>3. This is the combined quantity of internal tapes.</li> <li>4. Maximum of 4 tape drives and libraries; may be any combination of 2440, 7208 or 9348s. Each 9427 is counted as either 1 or 2 7208s.</li> <li>5. The combined maximum total of local and remote ASCII/Twinax displays is 28.</li> </ol>				

Model SB1

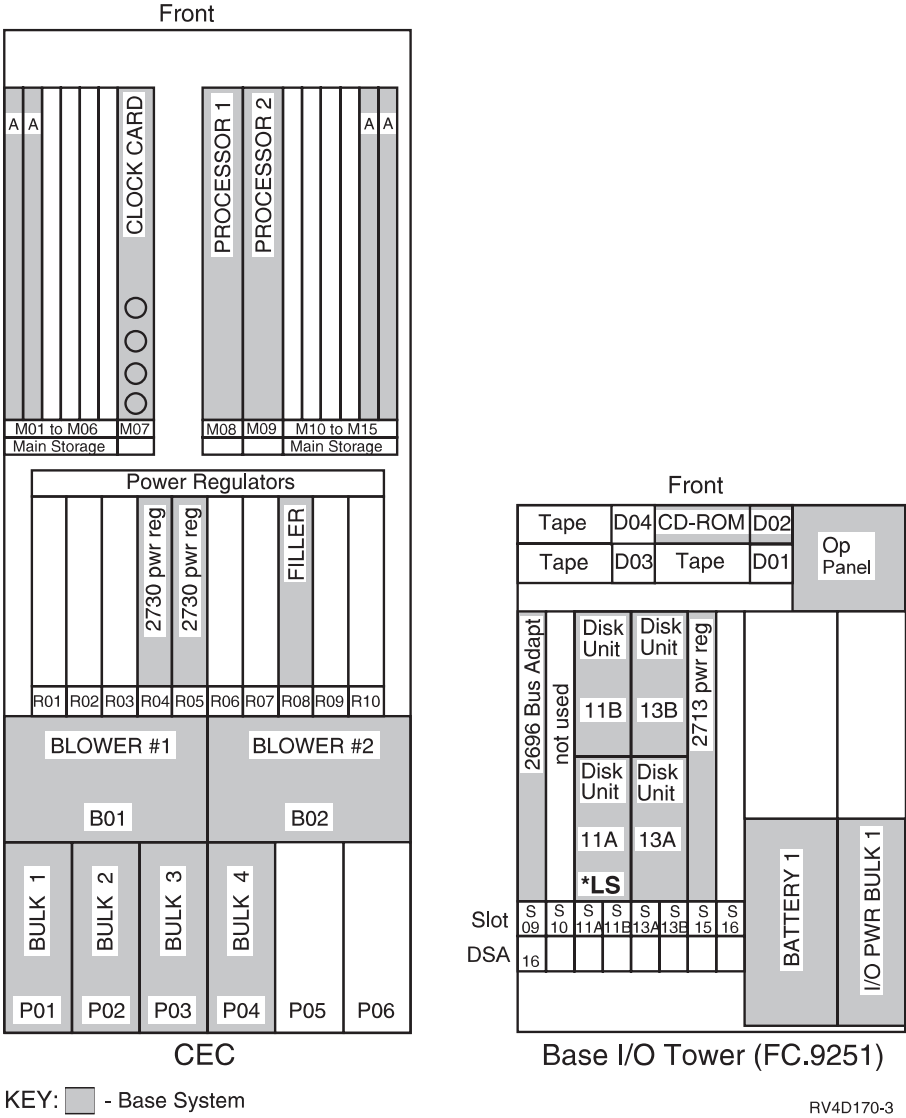
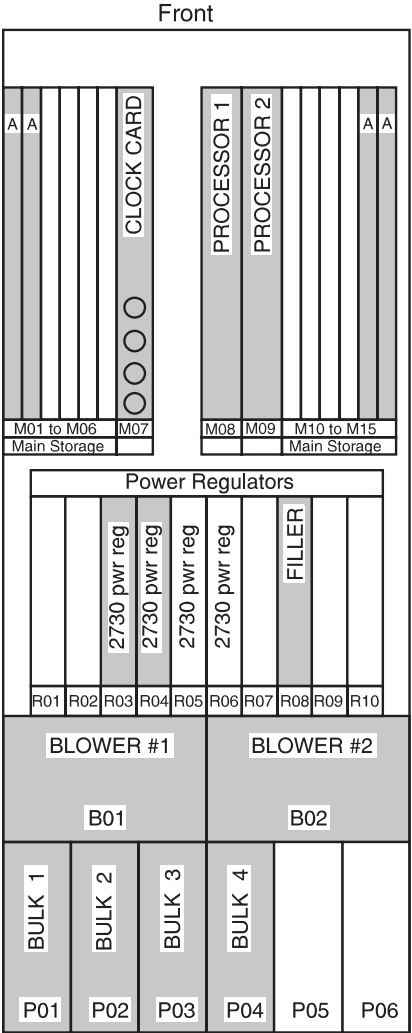
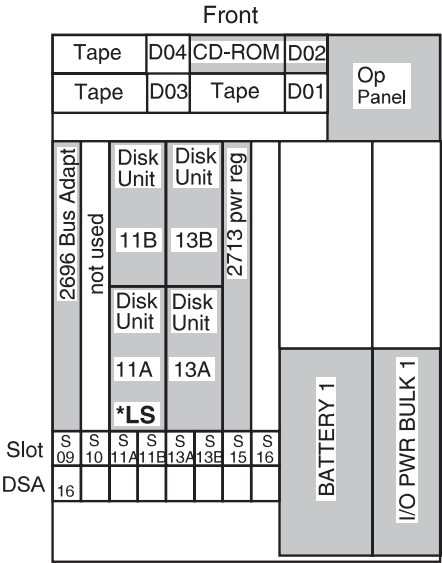


Figure 91. Model SB1 Front View (type 'A' processor)



CEC

KEY:  - Base System



Base I/O Tower (FC.9251)

RZAAC509-0

Figure 92. Model SB1 Front View — FC 2312, FC 2313 — (type 'N' processors)

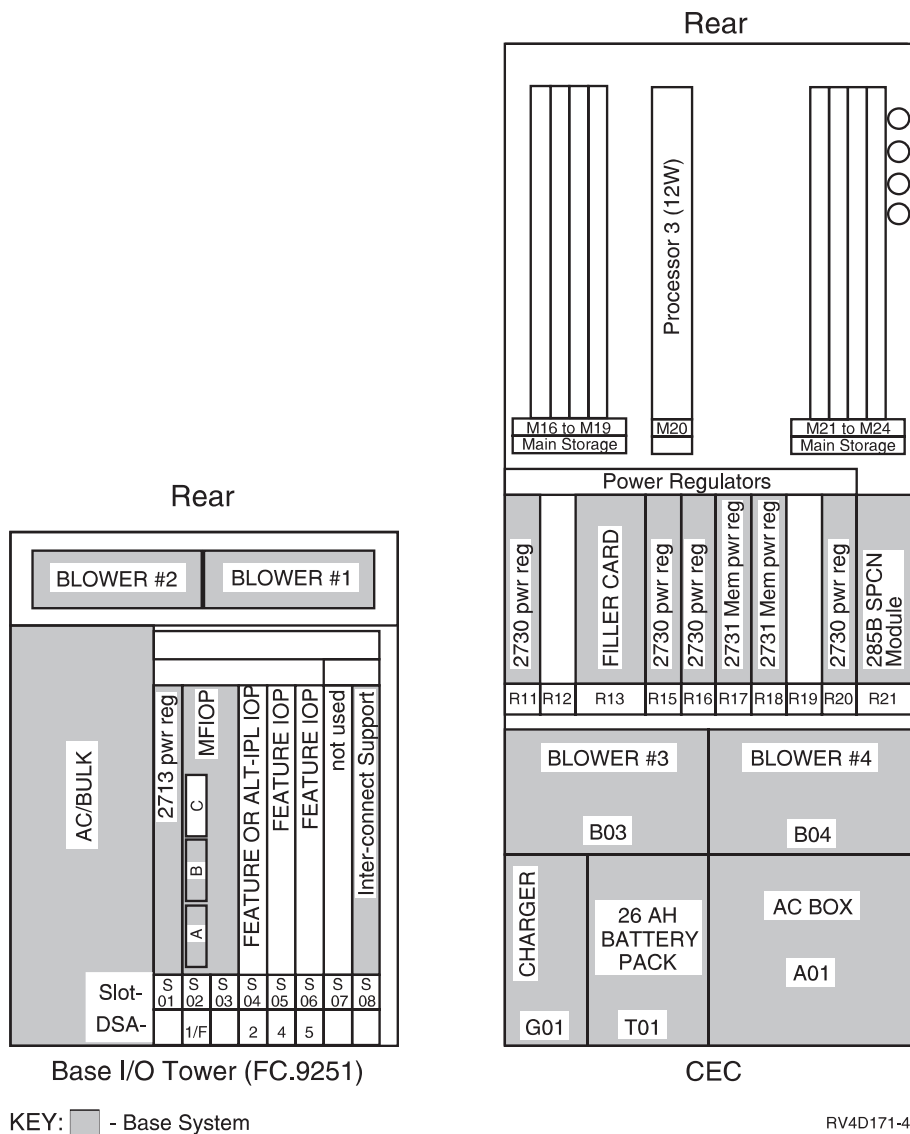


Figure 93. Model SB1 Rear View (type 'A' processor)

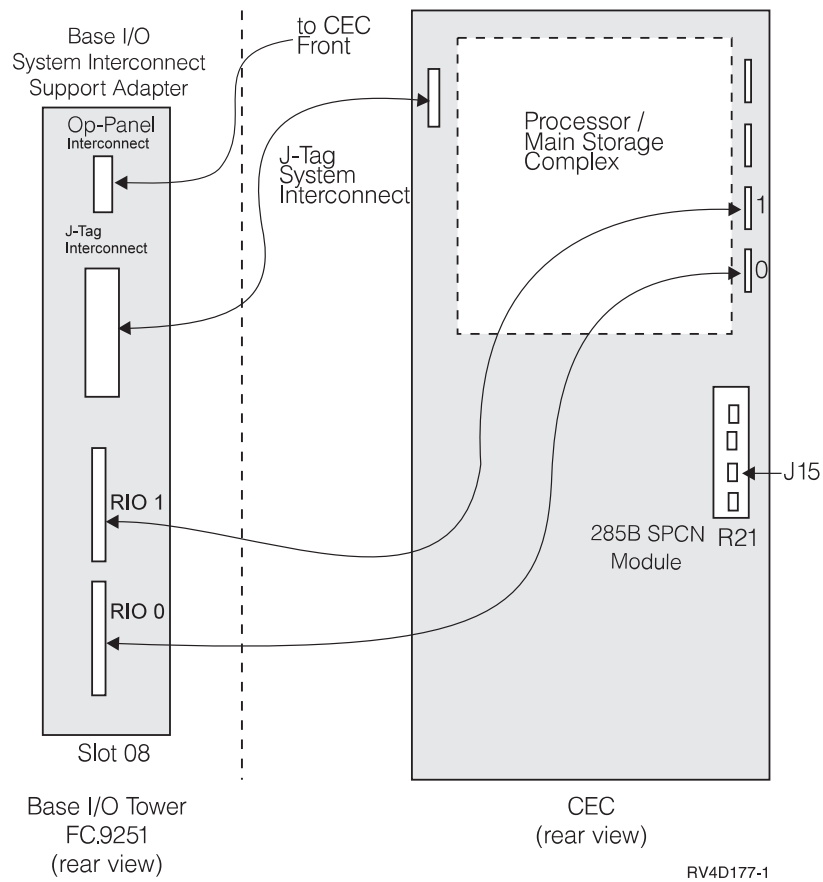


Figure 94. Model SB1 - System Interconnect Cabling

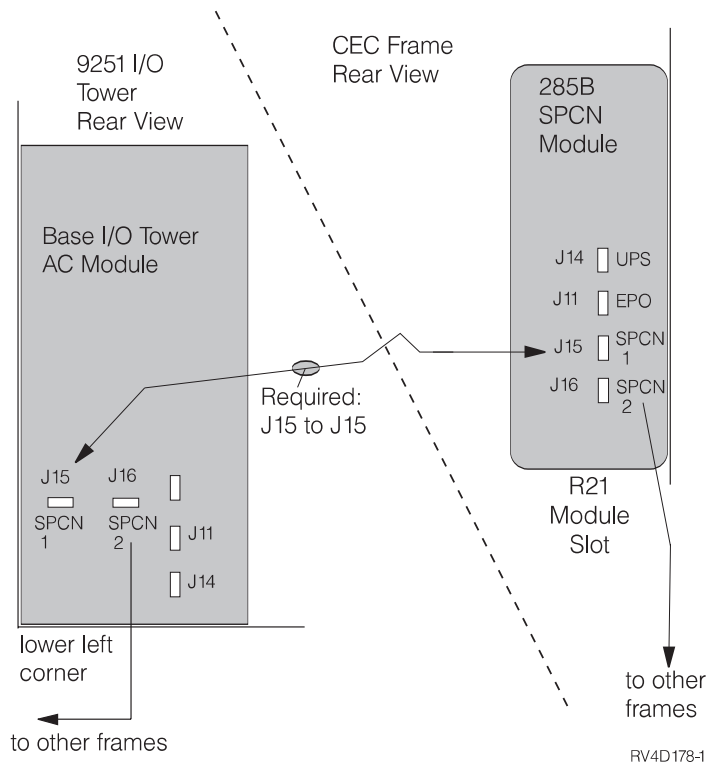


Figure 95. Model SB1 - CEC to Base I/O Tower SPCN

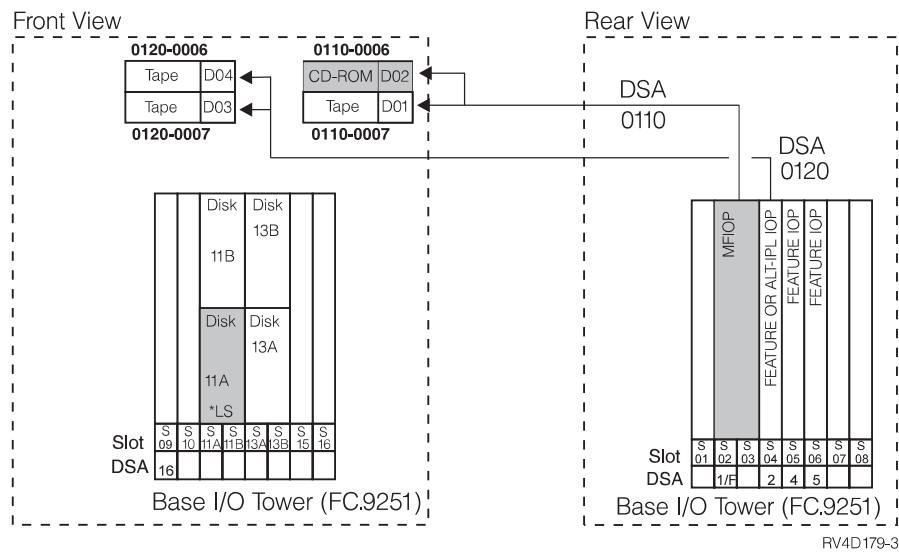


Figure 96. Model SB1 - Disk Addressing for I/O Tower

### Model SB1 - Processor and Main Storage Features:

Table 77. Model SB1 Processor and Main Storage Features

Card/Feature	FC 2310	FC 2311	FC 2312	FC 2313
Number of Processors	8	12	8	12

Table 77. Model SB1 Processor and Main Storage Features (continued)

Card/Feature	FC 2310	FC 2311	FC 2312	FC 2313
Base Bus Adapter (CCIN)	2696	2696	2696	2696
Expansion Bus Adapter (CCIN)	2695	2695	2695	2695
Main Storage Organization	Card Quads (4x cards)	Card Quads (4x cards)	Card Quads (4x cards)	Card Quads (4x cards)
Base Main Storage	4GB	4GB	8GB	8GB
Max Main Storage	4GB	4GB	8GB	8GB
Main Storage Card	3194	3194	3194	3194
Clock Card (CCIN)	25A9	25A9	25A9	25A9

**Model SB1 - Base System Features:**

**Model SB1 - Power and Battery Features:**

Table 78. SB1 Processor and Battery Features

Power Feature	Description	Details
5150	External Battery	<ul style="list-style-type: none"> <li>Connects to J3</li> <li>Expands CPM time to 48 Hours</li> <li>Cannot be mounted under floor or on a tower</li> <li>Maximized battery life is obtained when the FC 5150 is maintained at the same ambient temperature as the CEC frame.</li> </ul>

Table 79. Model SB1 Power Regulator Slot Content by Processor Feature

Proc FC	Type	Mem	Bulk Pwr	Front								Rear							
				R01	R02	R03	R04	R05	R06	R08 to R10	R11	R12	R13	R15	R16	R17	R18	R19	R20
2310	A (8w)	all	P01 - P04			PR	PR				PR		n/u	PR	PR	MC	MC		PR
2312	N (8w)	all	P01 - P04			PR	PR				PR			PR	PR	MC	MC		PR
2311	A (12w)	all	P01 - P04			PR	PR				PR		n/u	PR	PR	MC	MC		PR
2313	N (12w)	all	P01 - P04			PR	PR	PR	PR		PR			PR	PR	MC	MC		PR

**Note:**

- PR**— Programmable Regulator, CCIN.2730
- MC**— Memory Controller, CCIN.2731
- n/u** - not used

**Model SB1 - Feature Install Restrictions:**

- Limited to 2 IOP features in base I/O tower.
- FC 6616 must install in slots 4-5 or 5-6.
- FC 6617 must install in slots 4, 5, and 6.
- 2 RIO cables required when FC 2695 bus adapter is installed.
- Install FC 2695 bus adapter in slot 7.

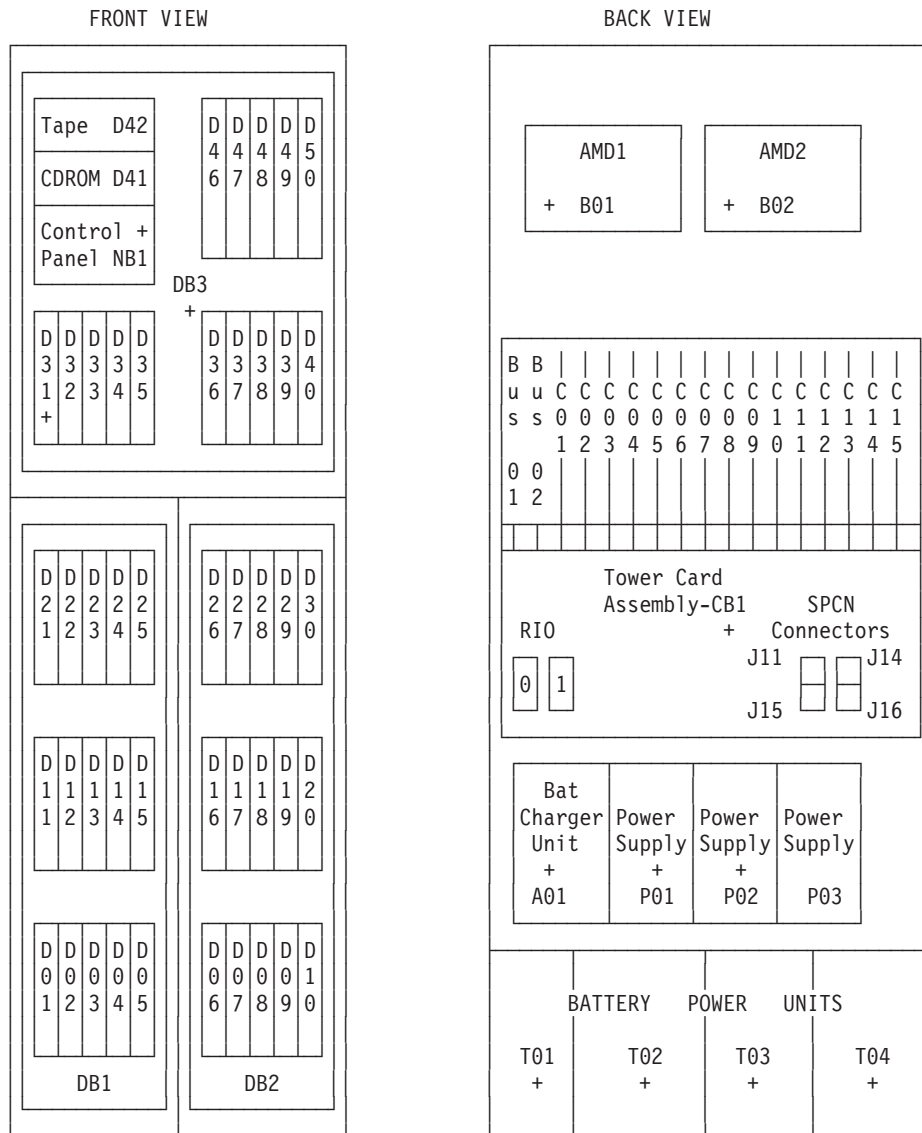
**Model SB1 Summary:***Table 80. Model SB1 Summary*

Description/Function	FC 2310, FC 2311, FC 2312, FC 2313
Disk Unit Capacity (GB)	
Base (4x 4.19)	16.77
Maximum Internal (4x 8.58)	34.35 (Internal limited to 17.16GB)
Maximum External	0
Diskette (8 or 5.25 inch)	0-2
Tape Attachment	
1/4-inch and/or 8mm (1)	0-3
8mm Cartridge, 9427 (2)	0-4
1/2-inch Reel 2440, 9348 (4)	0-4
3490, 3590, 3570 tape units	0-4
Packaging	
SPD I/O Bus	1-5
Physical I/O Card Slots	3-29
Logical Feature IOPs allowed	2
System Expansion (FC 507x)	0-2
Logical Packaging	
Feature I/O Cards (not including MFIOP)	0-2
Workstation Attachment	
Controllers Min/Max	1-3
TWINAX Controllers	1
TWINAX Devices (note 3)	28
ASCII Controllers	2
ASCII Devices (3)	28
Communications Lines	1-16
FAX IOPs (2 lines/IOP)	0-2
Cryptographic	0-1
LAN Ports	1-5
Optical Libraries	0-2

Table 80. Model SB1 Summary (continued)

Description/Function	FC 2310, FC 2311, FC 2312, FC 2313
<p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. This is the combined quantity of internal tapes.</li> <li>2. Maximum of 4 tape drives and libraries; may be any combination of 2440, 7208 or 9348s. Each 9427 is counted as either 1 or 2 7208s.</li> <li>3. The combined maximum number of local and remote displays attached to ASCII and Twinaxial is 7.</li> <li>4. No Storage Towers or External DASD allowed.</li> </ol>	

## PCI Expansion Tower (FC 5065)



RM = Removable Media  
+ = Base System

Figure 97. FC 5065 PCI Expansion Tower

Table 81 shows the Unit Addresses and descriptions for each PCI card slot.

Table 81. Card Slot Unit Addresses and Descriptions

Slot	DSA	Unit Address	Description
C01	XX10	E0FF FFFF	WAN/LAN/Twinax Twinax (2746)
C02	XX10	E1FF FFFF	WAN/LAN/Twinax Twinax (2746)
C03	XX10	FFFF FFFF	CFIOP (Base)

Table 81. Card Slot Unit Addresses and Descriptions (continued)

Slot	DSA	Unit Address	Description
C04	XX10	E7FF FFFF 0FFF FFFF	High Speed PCI SCSI PCI 1  Twinax (2746)
C05	XX10	ECFF FFFF	HS PCI  Twinax (2746)
C06	XX20	E0FF FFFF	WAN/LAN/Twinax  Twinax (2746)
C07	XX20	E1FF FFFF	WAN/LAN/Twinax  Twinax (2746)
C08	XX20	FFFF FFFF	CFIOP
C09	XX20	E7FF FFFF 0FFF FFFF	High Speed PCI SCSI PCI 2  Twinax (2746)
C10	XX20	ECFF FFFF	HS PCI  Twinax (2746)
C11	XX30	E0FF FFFF	WAN/LAN/Twinax  Twinax (2746)
C12	XX30	E1FF FFFF	WAN/LAN/Twinax  Twinax (2746)
C13	XX30	FFFF FFFF	CFIOP
C14	XX30	E7FF FFFF 0FFF FFFF	High Speed PCI SCSI PCI 3  Twinax (2746)
C15	XX30	ECFF FFFF	HS PCI  Twinax (2746)

Table 82 shows the Unit Addresses and descriptions for each device.

Table 82. Device Unit Addresses and Descriptions

Location	Device	DSA	Unit Address
D01	Disk Unit	XX20	0003 00FF
D02	Disk Unit	XX20	0004 00FF
D03	Disk Unit	XX20	0005 00FF
D04	Disk Unit	XX20	0006 00FF
D05	Disk Unit	XX20	0007 00FF
D06	Disk Unit	XX30	0003 00FF
D07	Disk Unit	XX30	0004 00FF
D08	Disk Unit	XX30	0005 00FF
D09	Disk Unit	XX30	0006 00FF

Table 82. Device Unit Addresses and Descriptions (continued)

Location	Device	DSA	Unit Address
D10	Disk Unit	XX30	0007 00FF
D11	Disk Unit	XX20	0103 00FF
D12	Disk Unit	XX20	0104 00FF
D13	Disk Unit	XX20	0105 00FF
D14	Disk Unit	XX20	0106 00FF
D15	Disk Unit	XX20	0107 00FF
D16	Disk Unit	XX30	0103 00FF
D17	Disk Unit	XX30	0104 00FF
D18	Disk Unit	XX30	0105 00FF
D19	Disk Unit	XX30	0106 00FF
D20	Disk Unit	XX30	0107 00FF
D21	Disk Unit	XX20	0203 00FF
D22	Disk Unit	XX20	0204 00FF
D23	Disk Unit	XX20	0205 00FF
D24	Disk Unit	XX20	0206 00FF
D25	Disk Unit	XX20	0207 00FF
D26	Disk Unit	XX30	0203 00FF
D27	Disk Unit	XX30	0204 00FF
D28	Disk Unit	XX30	0205 00FF
D29	Disk Unit	XX30	0206 00FF
D30	Disk Unit	XX30	0207 00FF
D31	Disk Unit	XX10	0001 00FF
D32	Disk Unit	XX10	0002 00FF
D33	Disk Unit	XX10	0003 00FF
D34	Disk Unit	XX10	0004 00FF
D35	Disk Unit	XX10	0005 00FF
D36	Disk Unit	XX10	0103 00FF
D37	Disk Unit	XX10	0104 00FF
D38	Disk Unit	XX10	0105 00FF
D39	Disk Unit	XX10	0106 00FF
D40	Disk Unit	XX10	0107 00FF
D41	CDROM	XX10	0006 00FF
D42	Tape	XX10	0007 00FF
D46	Disk Unit	XX10	0203 00FF
D47	Disk Unit	XX10	0204 00FF
D48	Disk Unit	XX10	0205 00FF
D49	Disk Unit	XX10	0206 00FF
D50	Disk Unit	XX10	0207 00FF

**FC 5065 - Power Supplies and Battery Backup**

The three 765 watt power supplies dock into the power distrobution backplane. Each power supply is identical to the others and is PN 90H6629. The battery packs are connected to the charger with power and signal cable PN 97H7474. The battery packs are also identical and have PN 97H7320.

**FC 5065 Summary**

- Each tower one to three DASD backplanes, each holding up to fifteen disk drives. The top DASD backplane, PN 24L0892, is required and also houses the Op. Panel, CDROM and tape drive.
- The PCI cage holds up to 14 PCI cards. It also houses the optical connections and SPCN connections.

**I/O Expansion Tower (FC 5070, FC 5071, FC 5072, and FC 5073)**

DEVICE 4						DEVICE 2				CONTROL PANEL			
DEVICE 3						DEVICE 1							
AIR INTAKE													
A	B	C	D	E	F	R E G U L A T O R	R E G U L A T O R	B A T T E R Y	P O W E R 2	F E A T U R E	P O W E R 2		
0x80	0x90	0xA0	0xB0	0xC0	0xD0	1	2	B A T T E R Y	P O W E R 1	F E A T U R E	P O W E R 1		
09	10	11	12	13	14	15	16	****		****			

DSA

Slot

Figure 98. FC 507x System Expansion Tower - Front View

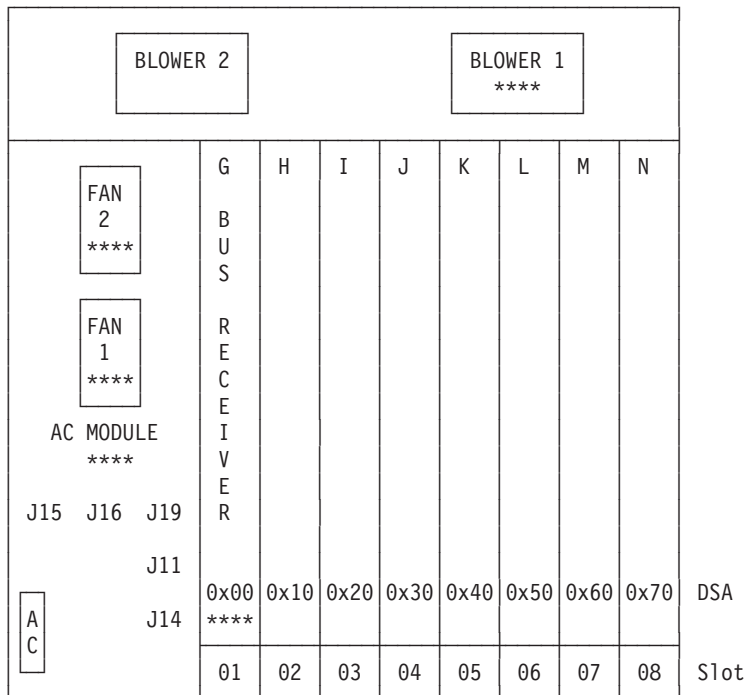


Figure 99. FC 507x System Expansion Tower - Rear View

**Note:** \*\*\*\* in a location indicates a minimum configuration.

In the following list, DSA means Direct Select Address, and UA means Unit Address.

Device **1** (UA=0700 FFFF)

Device **2** (UA=0600 FFFF)

Device **3** (UA=0500 FFFF)

Device **4** (UA=0400 FFFF)

**A** Feature IOP (DSA=0x80 UA=FFFF FFFF)

**B** Feature IOP (DSA=0x90 UA=FFFF FFFF)

**C** Feature IOP (DSA=0xA0 UA=FFFF FFFF)

**D** Feature IOP (DSA=0xB0 UA=FFFF FFFF)

**E** Feature IOP (DSA=0xC0 UA=FFFF FFFF)

**F** Feature IOP (DSA=0xD0 UA=FFFF FFFF)

**G** Optical Bus Receiver (DSA=0x00 UA=FFFF FFFF)

CCIN.2680 for FC 5070

CCIN.2680 for FC 5071

CCIN.2682 for FC 5072

CCIN.2682 for FC 5073

**H** Feature IOP or MSIOP (DSA=0x10 UA=FFFF FFFF)

**I** Feature IOP or Internal Tape IOP (DSA=0x20 UA=FFFF FFFF)

**J** Feature IOP (DSA=0x30 UA=FFFF FFFF)

**K** Feature IOP (DSA=0x40 UA=FFFF FFFF)

**L** Feature IOP (DSA=0x50 UA=FFFF FFFF)

**M** Feature IOP (DSA=0x60 UA=FFFF FFFF)

## FC 507x - System Power Supplies and Battery Backup

Table 83. FC 507x Power and Battery

Power Feature	Description	Details
5143	Feature Power Supply on FC 5070/5072	<ul style="list-style-type: none"> <li>Additional internal power supply <ul style="list-style-type: none"> <li>When FC 5052 - Disk Expansion Feature (16 Units) attached.</li> </ul> </li> <li>Place in Feature Power 2.</li> </ul>
9240	Base power supply	<ul style="list-style-type: none"> <li>Supplies AC power control and 400W power</li> <li>Installs in AC Module (rear) position.</li> <li>One required for each system unit or tower</li> </ul>
9243	Base feature power supply	<ul style="list-style-type: none"> <li>400W power</li> <li>One required for each system unit or tower</li> <li>Place in Feature Power 1.</li> </ul>
9245	Base Battery Backup	Installs in Battery Power 1
<b>Note:</b> Refer to Figure 98 on page 297 for location information.		

### FC 507x Summary

- Each tower has one bus.
- FC 5072 and FC 5073 attach via FC 2682 (optical bus receiver) in card slot 1.
- FC 5070 and FC 5071 attach via FC 2680 (optical bus receiver) in card slot 1.
- Internal Tape IOP, FC 2624, installed in card slot 3, supports up to 3 internal removable media devices in positions Device 1 - Device 3.
- In order to use a tape drive in positions 1 or 2 of the expansion tower, you must have a second removable media tray assembly with cable (PN46G3700) installed for positions 3 and 4. This completes the SCSI interface path to the terminator. The tape unit key mounting bracket (PN86G7656) must also be installed.
- Internal DASD IOP must be installed in card slot 2, supports up to 16 disk units in the FC 5052 or FC 5058 Storage Expansion Unit.
- FC 5058 requires both battery positions to be filled.

## Storage Towers (FC 5080, FC 5081, FC 5082, and FC 5083)

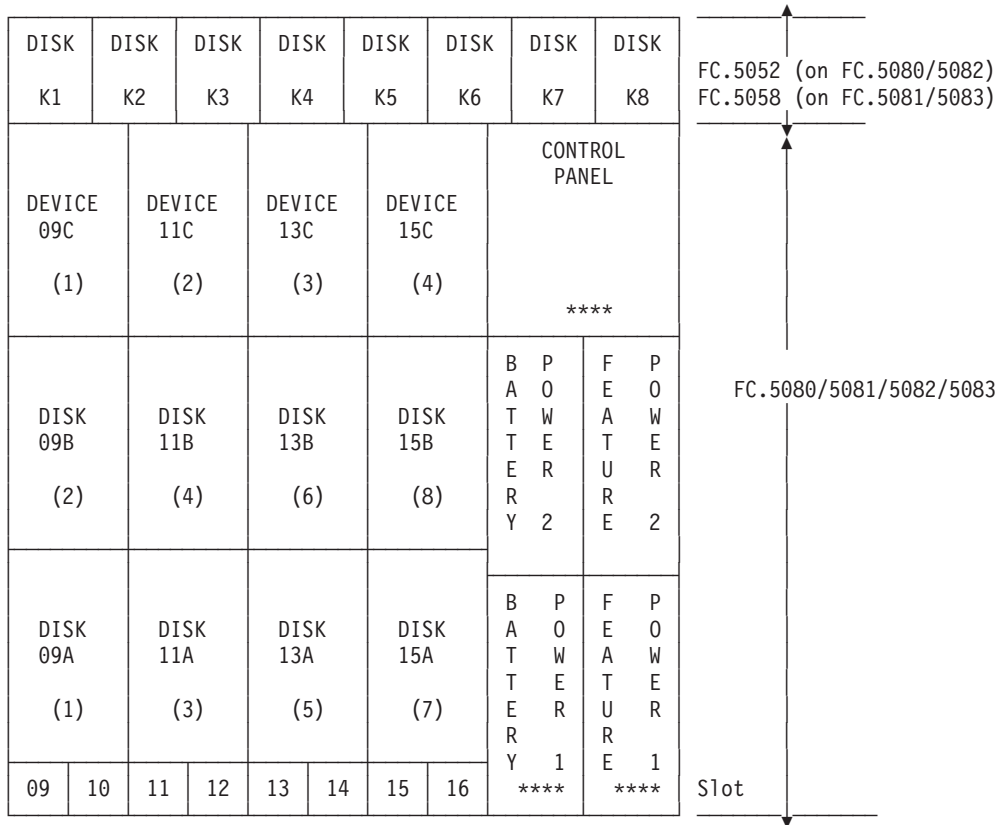


Figure 100. Storage Expansion Tower - Front View

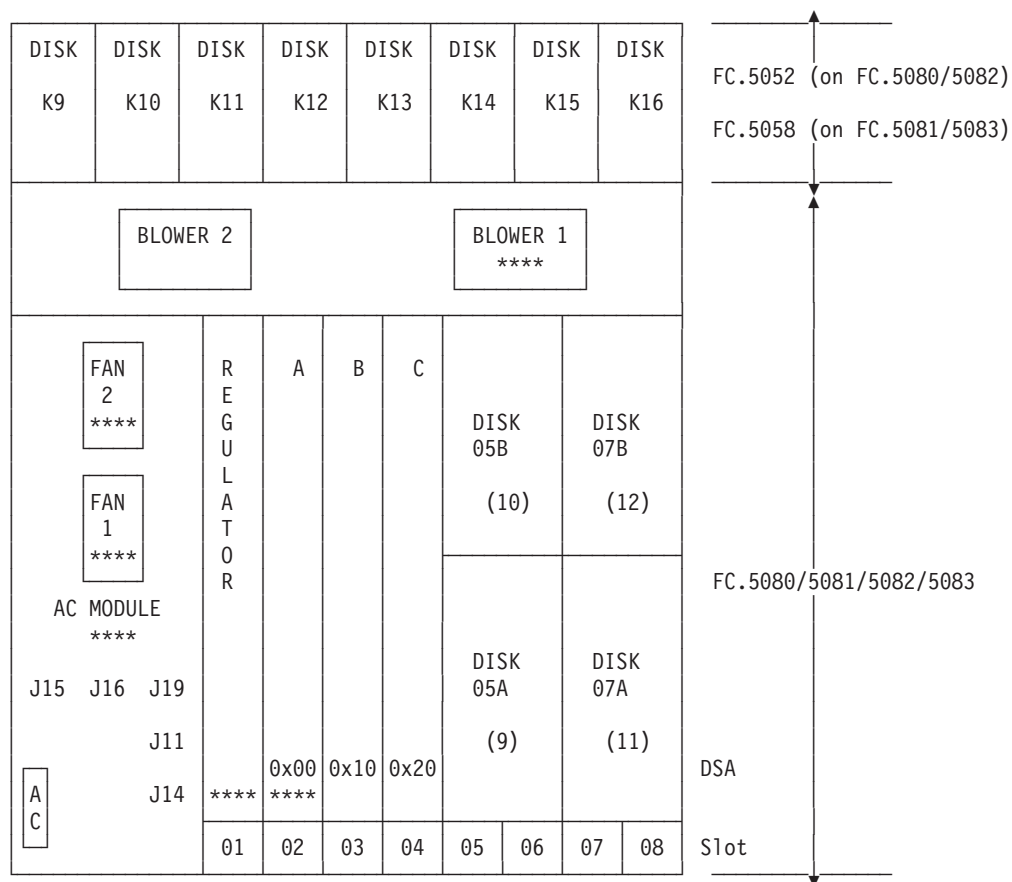


Figure 101. Storage Expansion Tower - Rear View

#### Notes:

1. \*\*\*\* in a location indicates a minimum configuration.
2. Single byte disk units, 6602 (FC 1602) and 6603 (FC 1603), cannot be installed in disk unit positions K8 through K16 of the storage expansion unit.

In the following list, DSA means Direct Select Address, and UA means Unit Address.

**A** Optical Bus Adapter (DSA=0x00 UA=FFFF FFFF)

**B** MSIOP (DSA=0x10 UA=FFFF FFFF) can attach the following:

	DSA	UA		DSA	UA
Device <b>09C</b>	0x10	0700 FFFF	Device <b>11C</b>	0x10	0600 FFFF
Device <b>13C</b>	0x10	0500 FFFF	Device <b>15C</b>	0x10	0400 FFFF
Disk <b>09A</b>	0x10	2100 FFFF	Disk <b>09B</b>	0x10	1100 FFFF
Disk <b>11A</b>	0x10	2200 FFFF	Disk <b>11B</b>	0x10	1200 FFFF
Disk <b>13A</b>	0x10	2300 FFFF	Disk <b>13B</b>	0x10	1300 FFFF
Disk <b>15A</b>	0x10	2400 FFFF	Disk <b>15B</b>	0x10	1400 FFFF
Disk <b>05A</b>	0x10	2500 FFFF	Disk <b>05B</b>	0x10	1500 FFFF
Disk <b>07A</b>	0x10	2600 FFFF	Disk <b>07B</b>	0x10	1600 FFFF

**C** MSIOP for FC 5052 (DSA=0x20 UA=FFFF FFFF)

## FC 508x - System Power Supplies and Battery Backup

Table 84. FC 508x Power and Battery

Power Feature	Description	Details
5143	Feature Power Supply on FC 5080/5082	<ul style="list-style-type: none"> <li>Additional internal power supply <ul style="list-style-type: none"> <li>When Disk Storage Expansion Unit installed <ul style="list-style-type: none"> <li>FC 5052 on FC 5082</li> </ul> </li> </ul> </li> <li>Place in Feature Power 2</li> </ul>
9240	Base power supply	<ul style="list-style-type: none"> <li>Supplies AC power control and 400W power</li> <li>Installs in AC Module (rear) position.</li> <li>One required for each system unit or tower</li> </ul>
9243	Base feature power supply	<ul style="list-style-type: none"> <li>400W power</li> <li>One required for each system unit or tower</li> <li>Place in Feature Power 2.</li> </ul>
9245	Base Battery Backup	Installs in Battery Power 1
<b>Note:</b> Refer to Figure 100 and Figure 101 for location information.		

### FC 508x Summary

- Each tower has one bus.
- FC 5082 and FC 5083 attach via CCIN.2682 (Optical bus receiver) in card slot 2.
- Internal DASD IOP installed in card slot 3 will support up to 16 disk units within the Storage Tower.
- Only double byte disk units are allowed in the Storage Tower positions.
- Internal DASD IOP installed in card slot 4 will support up to 16 disk units in the FC 5052/FC 5058 Storage Expansion Unit.
- Fill positions in the following sequence: 5A, 5B, 7A, 7B, 9A, 9B, 9C, 11A, 11B, 11C, 13A, 13B, 13C, 15A, 15B, 15C
- FC 5052 Disk storage expansion unit required on FC 5082. A battery unit is required in the lower battery location.
- FC 5058 Disk storage expansion unit required on FC 5083. Battery units are required in **both** the upper and the lower battery locations.

## FC 505x - Disk Expansion Units

### FC 5055 Disk Expansion Unit - 8 DASD Capacity

- FC 5055 adds capacity for 8 DASD Units and attaches to Models 640, S30, and 730 System Unit Towers.
- Requires FC 5151 Bulk Power in P06 of the system unit.
- Single byte disk units are not supported in this feature.
- All DASD devices must be SPCN (regulated) type units.
- Supports only "Ultra" type SCSI units.
- Fill disk expansion unit slots sequentially starting with slot K1.

Front

*	*	*	*	*	*	*	*
0110 -0101	0110 -0102	0110 -0103	0110 -0104	0110 -0105	0110 -0106	0110 -0107	0110 -0108
K01	K02	K03	K04	K05	K06	K07	K08

Notes:

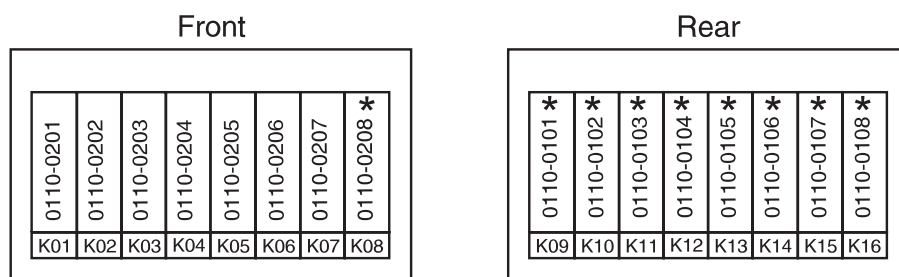
- Model 640 or S30
- Mounts on top of CEC frame
- Single Byte units cannot be placed in positions K01-K08 or F08 (slots marked with \*)
- REM system "jumper" is reconfigured when FC.5055 is installed to redirect SCSI Bus 1 to the expansion devices in K01-K08

RV4D172-1

Figure 102. FC 5055

### Disk Expansion Unit - 16 DASD Capacity

- FC 5052, FC 5057, FC 5058 adds capacity for 16 disk units and attaches to Expansion Towers.
- FC 5058 and FC 5052 attach to Expansion or Storage Towers.
- FC 5057 attaches to model 650 System Unit I/O Tower (9251).
- DASD positions K08 to K16 must be 2 byte SCSI bus units.
- All DASD devices must be SPCN (regulated) type units.
- Fill disk expansion unit slots sequentially starting with slot K1.
- FC 5057/5058 supports "Ultra" type SCSI disk units.
- FC 5052 supports "Fast" type SCSI disk units.

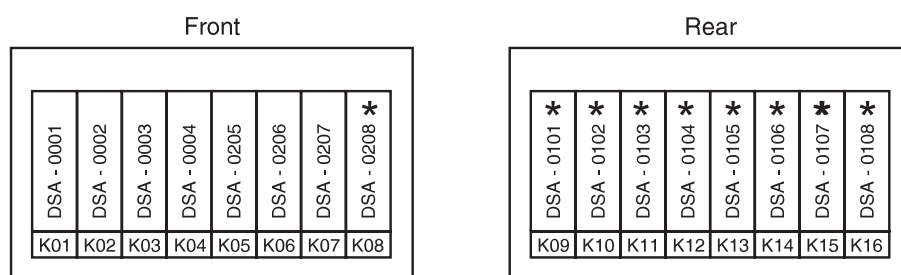


\* = a one byte disk unit cannot be installed in this slot.

DSA =  $\underbrace{\text{BB}}_{\text{Bus Number}}20$

RZAAC512-0

Figure 103. FC 5057



\* = a one byte disk unit cannot be installed in this slot.

DSA =  $\underbrace{\text{BB}}_{\text{Bus Number}}20$

RZAAC513-0

Figure 104. FC 5052/5058

## Disk Expansion Unit - DASD Unit addressing

See the appropriate SCSI Bus View diagram.

### Disk Expansion Unit - Capacity Table:

Table 85. Disk Storage Expansion Units

Feature Code	Installs On	SCSI Bus Type - width	Number of Disk Units Supported
5052	FC 5072 Expansion Tower  FC 5082 Expansion Tower	Fast - 2	16
5055	Model 640/S30 System Unit	Ultra - 2	8
5057	Model 650 System Unit I/O tower (FC 9251)	Ultra - 2	16

Table 85. Disk Storage Expansion Units (continued)

Feature Code	Installs On	SCSI Bus Type - width	Number of Disk Units Supported
5058 <sup>1</sup>	FC 5073 Expansion Tower  FC 5083 Storage Tower  FC 5071 Expansion Tower  FC 5081 Storage Tower	Ultra - 2	16
5082	—	Fast - 2	16
5083	—	Ultra - 2	16
<b>Notes:</b> 1. Requires <b>BOTH</b> battery positions to be filled in the tower.			

Table 86. 505x Disk Expansion Unit Capacity

Number of DASD Devices Installed	Protection Type <sup>2,3</sup>	DASD Size - 1GB	DASD Size - 2GB	DASD Size - 4GB	DASD Size - 8GB	DASD Size - 17GB
1	None	1.031GB	1.967GB	4.194GB	8.58GB	17.54GB
2	None	2.062GB	3.934GB	8.388GB	17.18GB	35.08GB
3	None	3.093GB	5.901GB	12.582GB	25.77GB	52.62GB
4	None	4.124GB	7.868GB	16.776GB	34.36GB	70.16GB
5	None	5.155GB	9.835GB	20.970GB	42.95GB	87.70GB
6	None	6.186GB	11.802GB	25.164GB	51.54GB	105.24GB
7	None	7.217GB	13.769GB	29.358GB	60.13GB	122.78GB
8	None	8.248GB	15.736GB	33.552GB	68.72GB	140.32GB
9	None	9.279GB	17.703GB	37.746GB	77.31GB	157.86GB
10	None	10.310GB	19.670GB	41.940GB	85.90GB	175.40GB
11	None	11.341GB	21.637GB	46.134GB	94.49GB	192.94GB
12	None	12.372GB	23.604GB	50.328GB	103.08GB	210.48GB
13	None	13.403GB	25.571GB	54.522GB	111.67GB	228.02GB
14	None	14.434GB	27.538GB	58.716GB	120.26GB	245.56GB
15	None	15.465GB	29.505GB	62.910GB	128.85GB	263.10GB
16	None	16.496GB	31.472GB	67.104GB	137.44GB	280.64GB
4	parity set	3.093GB	5.901GB	12.582GB	25.77GB	52.62GB
5	parity set	4.124GB	7.868GB	16.776GB	34.36GB	70.16GB
6	parity set	5.155GB	9.835GB	20.97GB	42.95GB	87.70GB

Table 86. 505x Disk Expansion Unit Capacity (continued)

Number of DASD Devices Installed	Protection Type <sup>2,3</sup>	DASD Size - 1GB	DASD Size - 2GB	DASD Size - 4GB	DASD Size - 8GB	DASD Size - 17GB
7	parity set	6.186GB	11.802GB	25.164GB	51.54GB	105.24GB
8	parity set	7.217GB	13.769GB	29.358GB	60.13GB	122.78GB
9	parity set	8.248GB	15.736GB	33.552GB	68.72GB	140.32GB
10	parity set	9.279GB	17.703GB	37.746GB	77.31GB	157.86GB
11	parity sets <sup>1</sup>	9.279GB	17.703GB	37.746GB	77.31GB	157.86GB
12	parity sets <sup>1</sup>	10.310GB	19.670 GB	41.940GB	85.90GB	175.40GB
13	parity sets <sup>1</sup>	11.341GB	21.637GB	46.134GB	94.49GB	192.94GB
14	parity sets <sup>1</sup>	12.372GB	23.604GB	50.328GB	103.08GB	210.48GB
15	parity sets <sup>1</sup>	13.403GB	25.571GB	54.522GB	111.67GB	228.02GB
16	parity sets <sup>1</sup>	14.434GB	27.538GB	58.716GB	120.26GB	245.56GB
<b>Notes:</b>  <sup>1</sup> requires 2 parity sets to be started.  <sup>2</sup> "None" in this column indicates no device parity set protection.  <sup>3</sup> "parity set" in this column indicates the devices are members of a parity set.						

## FC 5044 - I/O Expansion Rack

- FC 5044 attaches to Models 6xx, 7xx, and SB1 that support a 266Mbps optical link.
- Can migrate from Stage 2 systems.
- FC 5044 adds two additional buses.
- Provides 12 additional card slots to a system, six per bus.
- Card slot 1 must contain a 2684 (optical bus adapter) for Models 6xx.
- See Figure 110 on page 365.

Rear View

1	2	3	4	5	6	7	8	9	10	11	12	13	Card Slot Number
2 6 3 2 \ 2 6 8 4	I 0 P	I 0 P	I 0 P	I 0 P	I 0 P	I 0 P	I 0 P	I 0 P	I 0 P	I 0 P	I 0 P	I 0 P	
	1	2	3	4	5	6	1	2	3	4	5	6	Logical Slot Number
	Bus 2, 4, or 6						Bus 3, 5, or 7						

Front View

14	15	16	17	18	19	20	21	22	23	24	25	26	Card Slot Number
A F	A F	A F	2 7 0 0	2 7 0 0	2 7 0 0	A F	A F	A F	A F	A F	A F	A F	
2 6 3 9	2 6 3 9	2 6 3 9				2 6 3 9	2 6 3 9	2 6 3 9	2 6 3 9	2 6 3 9	2 6 3 9	2 6 3 9	

Figure 105. FC 5044 System Unit Expansion card enclosure (I/O Expansion Rack)

## Card and I/O Rules

### SPD (Book Card) Bus Rules

#### General

- All cards occupy one card slot unless specified otherwise.
- In general, subsystems (DASD, LAN, COMM...) should be evenly distributed across all buses.
- Slots are filled in DSA address sequence on a bus. <sup>1</sup>
- Empty card slots (or air flow cards) are not permitted between any two functional cards <sup>2</sup> on the same bus in the same card cage.
- Air flow (AF) cards **must** be installed in slots that do not contain logic cards.

1. Each system or tower diagram should be examined for fixed placement card slots or slots where the DSA addresses are not sequential.

2. An empty slot is determined by DSA address sequence, not by physical position of the card slot.

- AF 264A must be used in Advanced Series Towers.
- AF 2641 must be used in SPD IOA positions.

### Card Placement Priority

Cards should be added to card enclosures in the following priority:

1. Fixed placement cards. Refer to the model and subsystem rules.
2. Tape IOPs.
3. DASD IOPs.
4. Encryption IOP
5. LAN Subsystems (includes Integrated Netfinity Servers using a single slot).
6. LAN/WAN IOPs
7. Communications subsystems.
8. Workstation controllers.
9. Other IOPs:
  - Integrated FAX
  - Cryptographic IOPs
10. Integrated Netfinity Servers using multiple slots.

#### Note:

- Install cards in a ballanced distrobution across the avaiable busses.
- Follow the bus guidelines for high workload IOPs.
- Install the fixed placement IOPs first.
- Distribute the multi-slot IOPs at one for each bus until all the busses are filled.

## SPD Bus IOP Rules — High Workload IOPs

IOP workload and data traffic may need to be considered for Tape and DASD subsystems.

Use the following table for rules that apply to bus/IOP placement balance.

Table 87. Limits to Combinations of High Work-load IOPs

Subsystem	High Work-load IOP Type	Bus Capability
DASD	6112, 6500	Non-streaming
Tape	2621, 2624, 2644, 6112	Non-streaming
DASD	6501, 6530, 6502, 6512, 6532, 6533	Streaming
Tape	6501, 6513, 6534	Streaming
LAN	2621	Non-streaming
LAN	2810	Streaming
Tape	6501 or 6534 with 3590 External Tape device	Streaming
Rules: <ul style="list-style-type: none"> <li>• Maximum of 5 streaming High Workload IOPs per bus.</li> <li>• Maximum of 3 non-streaming High Workload IOPs per bus.</li> <li>• Do not place DASD IOPs in the same 266 Mbps bus (FC 5044) with Tape controller driving D/T3590.</li> </ul>		

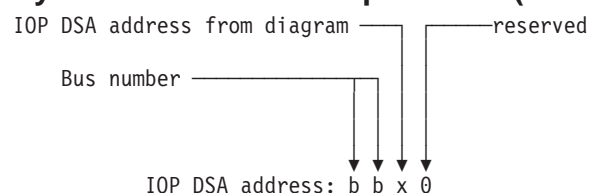
Table 87. Limits to Combinations of High Work-load IOPs (continued)

Subsystem	High Work-load IOP Type	Bus Capability
<b>Note:</b> Notes: <ul style="list-style-type: none"> <li>These guidelines are for all system buses and include the first bus of the system.</li> <li>Exceeding these guidelines will cause performance degradation.</li> </ul>		

## IOP SPD DSA addressing

The DSA address of an IOP is shown in the diagram for the tower or rack where the IOP is placed. The full DSA can be formed by combining the DSA number from the diagram with the bus number for that tower or rack.

### System Units or I/O Expansions (racks or towers):



## Model 6xx/Sxx/720 PCI Card Configuration Procedure and Rules

PCI features are configured using the following procedure.

- When you have PCI features to install, prioritize them by feature:
  - FC 2851/2854/2865 (Integrated Netfinity Server — 2 card set)
  - FC 2726/2740/2741/2748 (DASD Controller )
  - FC 2809/2824 (PCI Controller — required for IOAs below)
  - FC 2718/2729 (High Speed External SCSI Tape IOA)
  - FC 2811/2812/2815/2816/2818/2819, (ATM IOAs)
  - FC 2838 without SC 0222 (High Speed Ethernet LAN IOA)
  - FC 4800 (Cryptography)
  - FC 2838 with SC 0222 (High Speed Ethernet LAN IOA)
  - FC 2723 with SC 0221 (Ethernet LAN IOA)
  - FC 2724 with SC 0220 (Token Ring LAN IOA)
  - FC 2722 (Twinax WS IOA)
  - FC 2746 (Twinax WS IOA)
  - FC 2721 (Communications IOA)
  - FC 2745 (Communications IOA)
  - FC 2720 (Combined Twinax/Comm IOA)
- Make a list of the features you need to install, in the above priority.
  - Leave blank lines in between each feature in your list. You may need to move feature cards already installed in the customer's machine.
  - Call this list the INSTALL List.
- Use the location diagrams for the System and Model you are working with. Record the currently installed features in their slots.
- Use the following table to determine how to place each feature from the INSTALL List. Take the first feature from your INSTALL List and find it in the table below. Use the first slot that meets the conditions listed in the table.

- Take one feature at a time from the "top" of the INSTALL List
- DO NOT install any features until you have written down where each feature will go.
- If all conditions are met for a slot, write the feature and slot into the "after" diagram. Mark the feature as being installed, and select the next feature from the INSTALL List.
- If you need to move a feature that is already installed, then add the moved feature into your INSTALL List in the priority order. It will be installed again as you work through each feature.

Remember to move cables with cards.

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2865 FC 2854 FC 2851  (PCI Integrated Netfinity Server) <sup>1,2</sup>	1. E19–E20 <sup>3</sup>	<ul style="list-style-type: none"> <li>• No 2723 or 2724 in E14.</li> <li>• 2824 or 2809 in E15.</li> </ul>
	2. C06–C07 <sup>4</sup>	<ul style="list-style-type: none"> <li>• No 2722, 2723, 2724, 2746 in C04, C05, or C08.</li> <li>• No 2750, 2751, or 2761 in C04.</li> <li>• No 2721 or 2745 in C04 or C05.</li> </ul>
FC 2748 FC 2741 FC 2740 FC 2728 FC 2726  (Disk Ctlr) <sup>1,5</sup>	1. E16	<ul style="list-style-type: none"> <li>• Card to be installed must be 2748, 2741, or 2726.</li> </ul>
	1. C11 <sup>6</sup>	
FC 2824 FC 2809  (PCI Ctlr) <sup>1,7</sup>	1. E10 2. E05 3. C03	Use this slot priority sequence if you have: <ul style="list-style-type: none"> <li>• Two PCI Integrated Netfinity Server in the system, AND</li> <li>• No 2718 or 2729 card in the CEC or 5964 Expansion Unit.</li> </ul>
	1. C03 2. E10 3. E05	Otherwise use this slot priority sequence.
FC 2718 FC 2729  (Ext Tape Ctlr IOA) <sup>1,8</sup>	1. C02	<ul style="list-style-type: none"> <li>• 2809 or 2824 in slot C03.</li> <li>• Max of two 2723/2724s in C04 and C05.</li> </ul>
	2. E11	<ul style="list-style-type: none"> <li>• 2809/2824 in E10.</li> <li>If 2809, max of one 2723/2724 in E07, E08, and E09.</li> <li>If 2824, max of two 2723/2724s in E07, E08, and E09.</li> </ul>
	3.E06	<ul style="list-style-type: none"> <li>• 2809/2824 in E05</li> <li>If 2809, max of one 2723/2724 in E02, E03, and E04.</li> <li>If 2824, max of two 2723/2724s in E02, E03, and E04.</li> </ul>

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2811 FC 2812 FC 2815 FC 2816 FC 2818 FC 2819  (ATM IOAs) <sup>9,10</sup>	1. C02 2. C01	<ul style="list-style-type: none"> <li>• 2809/2824 in C03.</li> </ul> <p>If 2809:</p> <ul style="list-style-type: none"> <li>– No 2722/2746s in C04 or C05</li> <li>– With IPCS in C06–C07: <ul style="list-style-type: none"> <li>- No 2721/2745s in C04 or C05</li> <li>- Max of two 2723/2724s in C04 and C05</li> </ul> </li> <li>– With no IPCS in C06–C07: <ul style="list-style-type: none"> <li>- No 2723/2724s in C04 or C05</li> <li>- Max of two 2721/2745s in C04 and C05</li> </ul> </li> </ul> <p>If 2824:</p> <ul style="list-style-type: none"> <li>– With IPCS in C06–C07: <ul style="list-style-type: none"> <li>- No 2721/2745/2722/2746s in C04 or C05</li> <li>- Max of two 2723/2724s in C04 and C05</li> </ul> </li> <li>– With no IPCS in C06–C07: <ul style="list-style-type: none"> <li>- No 2723/2724s in C04 or C05</li> <li>- Max of two 2721/2745/2722/2746s in C04 and C05</li> </ul> </li> </ul>
	3. E11	<ul style="list-style-type: none"> <li>• 2809/2824 in E10.</li> </ul> <p>If 2809:</p> <ul style="list-style-type: none"> <li>– No 2722/2746s in E07, E08, or E09</li> <li>– No 2723/2724s in E07, E08, or E09</li> <li>– Max of two 2721/2745s in E07, E08, or E09</li> </ul> <p>If 2824:</p> <ul style="list-style-type: none"> <li>– No 2723/2724s in E07, E08, or E09</li> <li>– Max of two 2721/2745/2722/2746s in E07, E08, or E09</li> </ul>
	4. E06	<ul style="list-style-type: none"> <li>• 2809/2824 in E05.</li> </ul> <p>If 2809:</p> <ul style="list-style-type: none"> <li>– No 2722/2746s in E02, E03, or E04</li> <li>– No 2723/2724s in E02, E03, or E04</li> <li>– Max of two 2721/2745s in E02, E03, or E04</li> </ul> <p>If 2824:</p> <ul style="list-style-type: none"> <li>– No 2723/2724s in E02, E03, or E04</li> <li>– Max of two 2721/2745/2722/2746s in E02, E03, or E04</li> </ul>

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2838 (10/100Mbps Ethernet IOA) without SC 0222 <sup>10,11</sup>	1. C02 2. C01	<ul style="list-style-type: none"> <li>• 2809/2824 in C03.</li> </ul> <p>If 2809:</p> <ul style="list-style-type: none"> <li>– No 2722/2746s in C04 or C05</li> <li>– With IPCS in C06–C07: <ul style="list-style-type: none"> <li>- No 2721/2745s in C04 or C05</li> <li>- Max of two 2723/2724s in C04 and C05</li> </ul> </li> <li>– With no IPCS in C06–C07: <ul style="list-style-type: none"> <li>- No 2723/2724s in C04 or C05</li> <li>- Max of two 2721/2745s in C04 and C05</li> </ul> </li> </ul> <p>If 2824:</p> <ul style="list-style-type: none"> <li>– With IPCS in C06–C07: <ul style="list-style-type: none"> <li>- No 2721/2745s in C04 or C05</li> <li>- Max of two 2723/2724s in C04 and C05</li> </ul> </li> <li>– With no IPCS in C06–C07: <ul style="list-style-type: none"> <li>- No 2723/2724s in C04 or C05</li> <li>- Max of two 2721/2745s in C04 and C05</li> </ul> </li> </ul>
	3. E11	<ul style="list-style-type: none"> <li>• 2809/2824 in E10.</li> </ul> <p>If 2809:</p> <ul style="list-style-type: none"> <li>– No 2722/2746s in E07, E08, or E09</li> <li>– No 2723/2724s in E07, E08, or E09</li> <li>– Max of two 2721/2745s in E07, E08, or E09</li> </ul> <p>If 2824:</p> <ul style="list-style-type: none"> <li>– No 2723/2724s in E07, E08, or E09</li> <li>– Max of two 2721/2745/2722/2746s in E07, E08, or E09</li> </ul>
	4. E06	<ul style="list-style-type: none"> <li>• 2809/2824 in E05.</li> </ul> <p>If 2809:</p> <ul style="list-style-type: none"> <li>– No 2722/2746s in E02, E03, or E04</li> <li>– No 2723/2724s in E02, E03, or E04</li> <li>– Max of two 2721/2745s in E02, E03, or E04</li> </ul> <p>If 2824:</p> <ul style="list-style-type: none"> <li>– No 2723/2724s in E02, E03, or E04</li> <li>– Max of two 2721/2745/2722/2746s in E02, E03, or E04</li> </ul>
FC 4800 (Cryptographic)	1. E11	• 2824 in E10.
	2. E06	• 2824 in E05.
	3. C02	• 2824 in C03.
FC 2838 (10/100Mbps Ethernet IOA) with SC 0222 <sup>10,11</sup>	1. E17	• 2865/2854 in E19–E20.
	2. C04	• 2865/2854 in C06–C07.

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2723 with SC 0221 (Ethernet LAN IOA) <sup>11</sup>	1. E17	• 2865/2854 in E19–E20.
	2. C04	• 2865/2854 in C06–C07.
	3. E18	• 2865/2854 in E19–E20.
	4. C05	• 2865/2854 in C06–C07.
FC 2724 with SC 0220 (Token Ring LAN IOA) <sup>11</sup>	1. E17	• 2865/2854 in E19–E20.
	2. C04	• 2865/2854 in C06–C07.
	3. E18	• 2865/2854 in E19–E20.
	4. C05	• 2865/2854 in C06–C07.
FC 2750 FC 2751 (ISDN) and FC 2761  (Integrated Analog Modem)	1. E14	• 2824 in E15. • No 2750/2751/2761 in E12 or E13.
	2. E09	• 2824 in E10. • No 2750/2751/2761 in E07, E08 or E11.
	3. E04	• 2824 in E05. • No 2750/2751/2761 in E02, E03 or E06.
	4. C04	• 2824 in C03. • No IPCS in C06–C07. • No 2750/2751/2761 in C02 or C05.
	5. E13	• 2824 in E15. • No 2750/2751/2761 in E12, E14.
	6. E08	• 2824 in E10. • No 2750/2751/2761 in E07, E09 or E11.
	7. E03	• 2824 in E05. • No 2750/2751/2761 in E02, E04 or E06.
	8. C05	• 2824 in C03. • No IPCS in C06–C07. • No 2750/2751/2761 in C02 or C04.
	9. E12	• 2824 in E15. • No 2750/2751/2761 in E13 or E14.
	10. E07	• 2824 in E10. • No 2750/2751/2761 in E08, E09 or E11.
	11. E02	• 2824 in E05. • No 2750/2751/2761 in E03, E04 or E06.
	12. E11	• 2824 in E10. • No 2750/2751/2761 in E07, E08 or E09.
	13. E06	• 2824 in E05. • No 2750/2751/2761 in E02, E03 or E04.
	14. C02	• 2824 in C03. • No 2750/2751/2761 in C04, or C05.

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2723 with SC 0221 (Ethernet LAN IOA) or FC 2724 with SC 0220 (Token Ring LAN IOA) <sup>11,12</sup> (continued on next page)	1. C04	<ul style="list-style-type: none"> <li>• 2809/2824 in slot C03.</li> </ul> <p>If 2824, then no Integrated Netfinity Server in C06/C07.</p> <p>If 2809, then:</p> <ul style="list-style-type: none"> <li>– No Integrated Netfinity Server in C06/C07.</li> <li>– No ATM or 2838 in C01 or C02.</li> </ul>
	2. E14	<ul style="list-style-type: none"> <li>• 2809/2824 in slot E15.</li> </ul> <p>If 2824, then max of one 2723/2724 in E12 and E13.</p> <p>If 2809, then:</p> <ul style="list-style-type: none"> <li>– No Integrated Netfinity Server in E19–E20.</li> <li>– No ATM or 2838 in E16.</li> <li>– No 2723/2724 in E12 or E13.</li> </ul>
	3. E09	<ul style="list-style-type: none"> <li>• 2809/2824 in slot E10.</li> </ul> <p>If 2824, then max of one 2723/2724 in E12 and E13.</p> <p>If 2809, then:</p> <ul style="list-style-type: none"> <li>– No 2723/2724 in E07 or E08 if 2729 in E11.</li> <li>– Max of one 2723/2724 in E07 and E08 if no 2729 in E11.</li> <li>– No ATM or 2838 in E11.</li> </ul>
	4. E04	<ul style="list-style-type: none"> <li>• 2809/2824 in slot E05.</li> </ul> <p>If 2824, then max of one 2723/2724 in E02 and E03.</p> <p>If 2809, then:</p> <ul style="list-style-type: none"> <li>– No 2723/2724 in E02 or E03 if 2729 in E06.</li> <li>– Max of one 2723/2724 in E02 and E03 if no 2729 in E06.</li> <li>– No ATM or 2838 in E06.</li> </ul>
	5. C05	<ul style="list-style-type: none"> <li>• 2809/2824 in slot C03.</li> </ul> <p>If 2824, then no Integrated Netfinity Server in C06/C07.</p> <p>If 2809, then:</p> <ul style="list-style-type: none"> <li>– No Integrated Netfinity Server in C06/C07.</li> <li>– No ATM or 2838 in C01 or C02.</li> </ul>
	6. E13	<ul style="list-style-type: none"> <li>• 2824 in slot E15.</li> <li>• Max of one 2723/2724 in E12 and E14.</li> </ul>
	7. E08	<ul style="list-style-type: none"> <li>• 2809/2824 in slot E10.</li> </ul> <p>If 2824, then max of one 2723 in E07 and E09.</p> <p>If 2809, then:</p> <ul style="list-style-type: none"> <li>– No 2723/2724 in E07 or E09 if 2729 in E11.</li> <li>– Max of one 2723/2724 in E07 and E09 if no 2729 in E11.</li> <li>– No ATM or 2838 in E11.</li> </ul>

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2723 with SC 0221 (Ethernet LAN IOA) or FC 2724 with SC 0220 (Token Ring LAN IOA) <sup>11,12</sup> (continued)	8. E03	<ul style="list-style-type: none"> <li>• 2809/2824 in slot E10.</li> </ul> <p>If 2824, then max of one 2723 in E02 and E04.</p> <p>If 2809, then:</p> <ul style="list-style-type: none"> <li>– No 2723/2724 in E02 or E04 if 2729 in E06.</li> <li>– Max of one 2723/2724 in E02 and E04 if no 2729 in E06.</li> <li>– No ATM or 2838 in E06.</li> </ul>
	9. C08	<ul style="list-style-type: none"> <li>• No IPCS in C06–C07.</li> </ul>
	10. E12	<ul style="list-style-type: none"> <li>• 2824 in slot E15.</li> <li>• Max of one 2723/2724 in E08 and E09.</li> </ul>
	11. E07	<ul style="list-style-type: none"> <li>• 2824 in slot E10.</li> <li>• Max of one 2723/2724 in E08 and E09.</li> </ul>
	12. E02	<ul style="list-style-type: none"> <li>• 2824 in slot E05.</li> <li>• Max of one 2723/2724 in E03 and E04.</li> </ul>
	13. E11	<ul style="list-style-type: none"> <li>• 2824 in slot E10.</li> <li>• Max of one 2723/2724 in E07, E08 and E09.</li> </ul>
	14. E06	<ul style="list-style-type: none"> <li>• 2824 in slot E05.</li> <li>• Max of one 2723/2724 in E02, E03 and E04.</li> </ul>

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2722 (Twinax)	1. C10	
	2. C04	<ul style="list-style-type: none"> <li>No 2865/2854/2851 in C06–C07.</li> <li>2824/2809 in C03.</li> </ul> If 2809, then no 2838/ATM in C01 or C02.
	3. E14	<ul style="list-style-type: none"> <li>2824/2809 in E15</li> </ul> If 2824, then max of one 2722/2746 in E12 and E13. If 2809, then no 2838/ATM in E16.
	4. E09	<ul style="list-style-type: none"> <li>2824/2809 in E10</li> </ul> If 2824, then max of one 2722/2746 in E07 and E08. If 2809, then no 2838/ATM in E11.
	5. E04	<ul style="list-style-type: none"> <li>2824/2809 in E05</li> </ul> If 2824, then max of one 2722/2746 in E02 and E03. If 2809, then no 2838/ATM in E06.
	6. C05	<ul style="list-style-type: none"> <li>No 2865/2854/2851 in C06–C07.</li> <li>2824/2809 in C03.</li> </ul> If 2809, then no 2838/ATM in C01 or C02.
	7. E13	<ul style="list-style-type: none"> <li>2824/2809 in E15</li> </ul> If 2824, then max of one 2722/2746 in E12 and E14. If 2809, then no 2838/ATM in E16.
	8. E08	<ul style="list-style-type: none"> <li>2824/2809 in E10</li> </ul> If 2824, then max of one 2722/2746 in E07 and E09. If 2809, then no 2838/ATM in E11.
	9. E03	<ul style="list-style-type: none"> <li>2824/2809 in E05</li> </ul> If 2824, then max of one 2722/2746 in E02 and E04. If 2809, then no 2838/ATM in E06.
	10. E12	<ul style="list-style-type: none"> <li>2824/2809 in E15</li> </ul> If 2824, then max of one 2722/2746 in E13 and E14. If 2809, then no 2838/ATM in E16.
	11. E07	<ul style="list-style-type: none"> <li>2824/2809 in E10</li> </ul> If 2824, then max of one 2722/2746 in E08 and E09. If 2809, then no 2838/ATM in E11.
	12. E02	<ul style="list-style-type: none"> <li>2824/2809 in E05</li> </ul> If 2824, then max of one 2722/2746 in E03 and E04. If 2809, then no 2838/ATM in E06.
	13. C08	<ul style="list-style-type: none"> <li>No Integrated Netfinity Server in C06–C07.</li> </ul>

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2746 (Twinax)	1. C10	
	2. C04	<ul style="list-style-type: none"> <li>No 2865/2854/2851 in C06–C07.</li> <li>2824/2809 in C03.</li> <li>If 2809, then no 2838/ATM in C01 or C02.</li> </ul>
	3. E14	<ul style="list-style-type: none"> <li>2824/2809 in E15</li> <li>If 2824, then max of one 2722/2746 in E12 and E13.</li> <li>If 2809, then no 2838/ATM in E16.</li> </ul>
	4. E09	<ul style="list-style-type: none"> <li>2824/2809 in E10</li> <li>If 2824, then max of one 2722/2746 in E07 and E08.</li> <li>If 2809, then no 2838/ATM in E11.</li> </ul>
	5. E04	<ul style="list-style-type: none"> <li>2824/2809 in E05</li> <li>If 2824, then max of one 2722/2746 in E02 and E03.</li> <li>If 2809, then no 2838/ATM in E06.</li> </ul>
	6. C05	<ul style="list-style-type: none"> <li>No 2865/2854/2851 in C06–C07.</li> <li>2824/2809 in C03.</li> <li>If 2809, then no 2838/ATM in C01 or C02.</li> </ul>
	7. E13	<ul style="list-style-type: none"> <li>2824/2809 in E15</li> <li>If 2824, then max of one 2722/2746 in E12 and E14.</li> <li>If 2809, then no 2838/ATM in E16.</li> </ul>
	8. E08	<ul style="list-style-type: none"> <li>2824/2809 in E10</li> <li>If 2824, then max of one 2722/2746 in E07 and E09.</li> <li>If 2809, then no 2838/ATM in E11.</li> </ul>
	9. E03	<ul style="list-style-type: none"> <li>2824/2809 in E05</li> <li>If 2824, then max of one 2722/2746 in E02 and E04.</li> <li>If 2809, then no 2838/ATM in E06.</li> </ul>
	10. E12	<ul style="list-style-type: none"> <li>2824/2809 in E15</li> <li>If 2824, then max of one 2722/2746 in E13 and E14.</li> <li>If 2809, then no 2838/ATM in E16.</li> </ul>
	11. E07	<ul style="list-style-type: none"> <li>2824/2809 in E10</li> <li>If 2824, then max of one 2722/2746 in E08 and E09.</li> <li>If 2809, then no 2838/ATM in E11.</li> </ul>
	12. E02	<ul style="list-style-type: none"> <li>2824/2809 in E05</li> <li>If 2824, then max of one 2722/2746 in E03 and E04.</li> <li>If 2809, then no 2838/ATM in E06.</li> </ul>
	13. C08	<ul style="list-style-type: none"> <li>No Integrated Netfinity Server in C06–C07.</li> </ul>
	14. E11	<ul style="list-style-type: none"> <li>2824 in E10.</li> </ul>
	15. E06	<ul style="list-style-type: none"> <li>2824 in E05.</li> </ul>

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2721 (Comm)	1. C09	Replaces 2720 in C09 when changing console from Twinax to Client Access or Operations Console.
	2. C04	<ul style="list-style-type: none"> <li>• 2824/2809 in slot C03.</li> <li>• No Integrated Netfinity Server in C06/C07.</li> </ul>
	3. E07	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E10.</li> <li>• No ATM or 2838 in E11.</li> </ul>
	4. E02	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E05.</li> <li>• No ATM or 2838 in E06.</li> </ul>
	5. E14	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E15.</li> <li>• If ATM or 2838 in E16, then max of one 2721/2745 in E12 and E13.</li> </ul>
	6. C05	<ul style="list-style-type: none"> <li>• 2824/2809 in slot C03.</li> <li>• No Integrated Netfinity Server in C06/C07.</li> </ul>
	7. E13	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E15.</li> <li>• If ATM or 2838 in E16, then max of one 2721/2745 in E12 and E14.</li> </ul>
	8. E09	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E10.</li> <li>• If ATM or 2838 in E11, then max of one 2721/2745 in E07 and E08.</li> </ul>
	9. E04	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E05.</li> <li>• If ATM or 2838 in E06, max of one 2721/2745 in E02 and E03.</li> </ul>
	10. C10	
	11. E12	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E15.</li> <li>• If ATM or 2838 in E16, then max of one 2721/2745 in E13 and E14.</li> </ul>
	12. E08	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E10.</li> <li>• If ATM or 2838 in E11, then max of one 2721/2745 in E07 and E09.</li> </ul>
	13. E03	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E05.</li> <li>• If ATM or 2838 in E06, max of one 2721/2745 in E02 and E04.</li> </ul>
	14. C08	

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2745 (Comm)	1. C09	Replaces 2720 in C09 when changing console from Twinax to Client Access or Operations Console.
	2. C04	<ul style="list-style-type: none"> <li>• 2824/2809 in slot C03.</li> <li>• No Integrated Netfinity Server in C06/C07.</li> </ul>
	3. E14	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E15.</li> <li>• If ATM or 2838 in E16, then max of one 2721/2745 in E12 and E13.</li> </ul>
	4. E09	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E10.</li> <li>• If ATM or 2838 in E11, then max of one 2721/2745 in E07 and E08.</li> </ul>
	5. E04	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E05.</li> <li>• If ATM or 2838 in E06, max of one 2721/2745 in E02 and E03.</li> </ul>
	6. E13	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E15.</li> <li>• If ATM or 2838 in E16, then max of one 2721/2745 in E12 and E14.</li> </ul>
	7. E08	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E10.</li> <li>• If ATM or 2838 in E11, then max of one 2721/2745 in E07 and E09.</li> </ul>
	8. E03	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E05.</li> <li>• If ATM or 2838 in E06, max of one 2721/2745 in E02 and E04.</li> </ul>
	9. C10	
	10. E12	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E15.</li> <li>• If ATM or 2838 in E16, then max of one 2721/2745 in E13 and E14.</li> </ul>
	11. E07	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E10.</li> <li>• No ATM or 2838 in E11.</li> </ul>
	12. E02	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E05.</li> <li>• No ATM or 2838 in E06.</li> </ul>
	13. C08	
	14. E11	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E10.</li> </ul>
15. E06	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E05.</li> </ul>	
FC 2720 (Comm/ Twinax)	1. C09	Replaces 2721/2745 in C09 when changing console from Twinax to Client Access or Operations Console.
	2. E09 3. E08 4. E07	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E10.</li> <li>• No ATM or 2838 in E11.</li> </ul>
	5. E04 6. E03 7. E02	<ul style="list-style-type: none"> <li>• 2824/2809 in slot E05.</li> <li>• No ATM or 2838 in E06.</li> </ul>
	7. C10	<ul style="list-style-type: none"> <li>• No Integrated Netfinity Server in C06 or C07.</li> </ul>

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
<b>Notes:</b> <ol style="list-style-type: none"> <li>Any card from this group can be upgraded (replaced on a one for one basis) with any card listed above it in the same group. For example, a 2866 can replace a 2857. The reverse is not always true. For example, a 2857 can not replace a 2866 without loss of function and possibly requiring more card movements.</li> <li>If you have one of each type to install, place this priority: 1) 2866, 2) 2854, 3) 2851.</li> <li>285A Bridge card installs in E20; processor card installs in E19.</li> <li>285A Bridge card installs in C06; processor card installs in C07.</li> <li>If you have one of each type to install, place this priority: 1) 2748, 2) 2741, 3) 2740, 4) 2726.</li> <li>New DASD Controller replaces old one in this location.</li> <li>If you have one of each type to install, place this priority: 1) 2824, 2) 2809.</li> <li>If you have one of each type to install, place this priority: 1) 2718, 2) 2729.</li> <li>Multiple cards in this group can be installed in any sequence. Neither has priority over any other in the group.</li> <li>These cards can be used with FC 2810 in the SPD environment. If the system has FC 2810, determine with the customer where the cards should be installed.</li> <li>These cards can be used with FC 6617 or FC 6618 in the SPD environment. If the system has FC 6617 or FC 6618, determine with the customer where the cards should be installed.</li> <li>If you have one of each type to install, place this priority: 1) all 2723s, 2) all 2724s.</li> <li>Max of one 2720 allowed per system. Do not count a 9720 base workstation controller as a 2720 for this limitation.</li> </ol>		

## Model 170 PCI Card Configuration —Rules and Procedure

PCI features for the Model 170 are configured using the following procedure.

- When you have PCI features to install, prioritize them by feature:
  - FC 2857/2866 (Integrated Netfinity Server — 2 card set)
  - FC 2740/2741/2748 (DASD Controller )
  - FC 2809/2824 (PCI Controller — required for IOAs below)
  - FC 2718/2729 (High Speed External SCSI Tape IOA)
  - FC 2811/2812/2819 (Low Speed ATM IOAs)
  - FC 2815/2816/2818 (High Speed ATM IOAs)
  - FC 2838 with SC 0222 (Integrated Netfinity Server High Speed Ethernet LAN IOA)
  - FC 2723 with SC 0221 (Integrated Netfinity Server Ethernet LAN IOA)
  - FC 2724 with SC 0220 (Integrated Netfinity Server Token Ring LAN IOA)
  - FC 2838 without SC 0222 (non-Integrated Netfinity Server High Speed Ethernet LAN IOA)
  - FC 2750/2751/2761 (ISDN/ISDN/Integrated Modem)
  - FC 4800 (Cryptographic card)
  - FC 2723 without SC 0221 (non-Integrated Netfinity Server Ethernet LAN IOA)
  - FC 2724 without SC 0220 (non-Integrated Netfinity Server Token Ring LAN IOA)
  - FC 2722 (Twinax WS IOA)
  - FC 2746 (Twinax WS IOA)
  - FC 2721 (Communications IOA)
  - FC 2745 (Communications IOA)

- s. FC 2720 (Workstation IOA)
- Make a list of the features you need to install, in the above priority.
    - Leave blank lines in between each feature in your list. You may need to move feature cards already installed in the customer's machine.
    - Call this list the INSTALL List.
  - Use the location diagrams for the System and Model you are working with. Record the currently installed features in their slots.
  - Use the following table to determine how to place each feature from the INSTALL List. Take the first feature from your INSTALL List and find it in the table below. Use the first slot that meets the conditions listed in the table.
    - Take one feature at a time from the "top" of the INSTALL List
    - DO NOT install any features until you have written down where each feature will go.
    - If all conditions are met for a slot, write the feature and slot into the "after" diagram. Mark the feature as being installed, and select the next feature from the INSTALL List.
    - If you need to move a feature that is already installed, then add the moved feature into your INSTALL List in the priority order. It will be installed again as you work through each feature.
- Remember to move cables with cards.

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2866 FC 2857  (PCI Integrated Netfinity Server) <sup>1,2</sup>	1. C02/C04 <sup>3</sup>	• C03 empty.
	2. E02/E04 <sup>4</sup>	• E03 must be empty. • FC 2809 in E07.
FC 2748 FC 2741 FC 2740  (Disk Ctlr) <sup>1</sup>	C07 <sup>5,6</sup>	
FC 2824 FC 2809  (PCI Ctlr) <sup>1,7</sup>	1. E10 <sup>8</sup>	
	2. E07	
FC 2718 FC 2729  (Ext Tape Ctlr IOA) <sup>1,9</sup>	1. E09	
	2. E03	• 2809/2824 in E07. • E02/E04 Empty
FC 2811 FC 2812 FC 2819  (Low Speed ATM IOAs) <sup>10</sup>	1. C03	• C02 and C04 empty.
	2. E03	• 2809/2824 in E07. • E02 and E04 Empty
	3. E08	• E13 empty.
FC 2815 FC 2816 FC 2818  (High Speed ATM IOAs) <sup>11</sup>	1. E03	• 2809/2824 in E07. • E02/E04 empty.
	2. E08	• If 2824 is in E10, then E13 can be filled. • If 2809 is in E10, then no 2721/2745/2722/2746 in E13.

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2838 (10/100 Mbps Ethernet HS IOA) with SC.0222	1. C05	• 2857/2866 in C02-C04.
	2. E05	• 2857/2866 in E02-E04.
FC 2723 (Ethernet IOA) with SC.0221 or FC 2724 (Token Ring IOA) with SC 0220	1.C05	• Integrated Netfinity Server in C02/C04.
	2.E05	• Integrated Netfinity Server in E02/E04.
	3.C06	• Integrated Netfinity Server in C02/C04.
	4.E06	• Integrated Netfinity Server in E02/E04.
FC 2838 (10/100 Mbps Ethernet HS IOA) without SC.0222	1.E08	
	2.E03	• 2809/2824 in E07. • Slot E02 and E04 empty.
	3.C03	• Slot C02 and C04 empty.
FC 2750, FC 2751, FC 2761 (ISDN/ISDN/Integrated Modem)	1.E08	• 2824 in E10.
	2.E03	• 2824 in E07.
	3.C03	• Slot C02 and C04 empty.
FC 4800 (Cryptographic card)	1.E08	• 2824 in E10.
	2.E03	• 2824 in E07. • E02-E04 empty.
FC 2723 (Ethernet IOA) without SC.0221 and FC 2724 (Token Ring LAN IOA) without SC 0220	1.E14	• 2824 in E10.
	2.E12	• 2824 in E07.
	3.C03	• 2824 in E10. • C02-C04 Empty.
	4.E13	• 2824 in E10.
	5.E11	• 2824 in E07.
	6.E08	• 2824/2809 in E10.
	7.E03	• 2824/2809 in E07. • E02-E04 empty.
	8.C03	• C02-C04 empty.
	5.C09	• Integrated Netfinity Server in C02/C04.
FC 2722 (Twinax)	1. E14	• 2824/2809 in E10.
	2. E12	• 2824/2809 in E07.
	3. E13	• 2824/2809 in E10. If 2809, then no ATM in E08.
	4. E11	• 2809/2824 in E07.
	5. C09	

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
FC 2746 (Twinax)	1. E14	
	2. E12	• 2824/2809 in E07.
	3. C03	• C02–C04 empty.
	4. E13	
	5. E11	• 2809/2824 in E07.
6. C09		
7. E08		
8. E03	• 2824 in E07. • E02–E04 empty.	
9. E09		
FC 2721 (Comm)	1. C08	• Replaces FC 2720/2745 as system console driver in this slot.
	2. E14	
	3. E12	• 2809/2824 in E07.
	4. E13	• 2809/2824 in E07. If 2809, then no ATM in E08.
	5. E11	
	6. C09	
FC 2745 (Comm)	1. C08	• Replaces FC 2720/2721 as system console driver in this slot.
	2. E14	• 2809/2824 in E10.
	3. E12	• 2809/2824 in E07.
	4. C03	• C02–C04 empty.
	5. E13	• 2809/2824 in E10.
	6. E11	• 2809/2824 in E07.
	7. C09	
	8. E08	
	9. E03	• 2809/2824 in E07. • E02–E04 empty.
	10. E09	• 2809/2824 in E07.
FC 2720 (Workstation Ctlr)	C08	• Replaces FC 2721/2745 as system console driver in C08.
	2. C09	• 2721/2745 in C08 is not used as system console driver.

Feature Card Type	Prioritized Allowable Slots	Conditions which MUST BE MET to install feature in this slot:
<b>Notes:</b> <ol style="list-style-type: none"> <li>Any card from this group can be upgraded (replaced on a one for one basis) with any card listed above it in the same group. For example, a 2866 can replace a 2857. The reverse is not always true. For example, a 2857 can not replace a 2866 without loss of function and possibly requiring more card movements.</li> <li>If you have one of each type to install, place the 2866 first.</li> <li>Bridge card installs in C04; processor card installs in C02.</li> <li>Bridge card installs in E02; processor card installs in E04.</li> <li>New DASD Controller replaces old one in this location.</li> <li>Processors 2289/2290/2291/2292 have a built in controller. Slot C07 will be open until one of the listed feature controllers are installed.</li> <li>If you have one of each type to install, place the 2824 first.</li> <li>FC 7101 System Expansion Unit is shipped with a 2809 in this slot. FC 7102 is shipped with a 2824 in this slot.</li> <li>If you have one of each type to install, place the 2718 first.</li> <li>Multiple Cards in this group can be installed in any sequence, no type has priority.</li> <li>Multiple cards of this group should use priority order: 1)2815; 2)2816; 3)2818.</li> </ol>		

## FC 5065 PCI Tower Card Configuration —Rules and Procedure

PCI features for the FC 5065 PCI Tower are configured using the following procedure.

- When you have PCI features to install, prioritize them by feature:
  - FC 2748 (DASD Controller )
  - FC 2824 (PCI Controller — required for IOAs below)
  - FC 2718/2729 (High Speed External SCSI Tape IOA)
  - FC 2811/2812/2815/2816/2818/2819 (ATM IOAs)
  - FC 2838 without SC 0222 (non-Integrated Netfinity Server High Speed Ethernet LAN IOA)
  - FC 4800 (Cryptographic card)
  - FC 2750/2751/2761 (ISDN/ISDN/Integrated Modem)
  - FC 2723 without SC 0221 (non-Integrated Netfinity Server Ethernet LAN IOA)
  - FC 2724 without SC 0220 (non-Integrated Netfinity Server Token Ring LAN IOA)
  - FC 2746 (Twinax WS IOA)
  - FC 2745 (Communications IOA)
- Make a list of the features you need to install, in the above priority.
  - Leave blank lines in between each feature in your list. You may need to move feature cards already installed in the customer's machine.
  - Call this list the INSTALL List.
- Use the location diagrams in the Problem Analysis Guide. Record the currently installed features in their slots.
- Use the following table to determine how to place each feature from the INSTALL List. Take the first feature from your INSTALL List and find it in the table below. Use the first slot that meets the conditions listed in the table.

**Note:** Card slot numbers for the FC 5065 PCI Tower are preceded here with a *T* to prevent confusion with the slot numbers in the system CEC frame.

- Take one feature at a time from the "top" of the INSTALL List
- DO NOT install any features until you have written down where each feature will go.
- If all conditions are met for a slot, write the feature and slot into the "after" diagram. Mark the feature as being installed, and select the next feature from the INSTALL List.
- If you need to move a feature that is already installed, then add the moved feature into your INSTALL List in the priority order. It will be installed again as you work through each feature.

Remember to move cables with cards.

Feature Card Type	Prioritized Allowable Slots <sup>1</sup>	Conditions which MUST BE MET to install feature in this slot:
FC 2748 (Disk Ctlr)	TC04	• 2824 in TC03.
	TC09	• 2824 in TC08.
	TC14	• 2824 in TC13.
FC 2824 (PCI Ctlr)	1. TC03 2. TC08 3. TC13	
FC 2718, FC 2729 (Tape Ctlr) <sup>2</sup>	TC04	• 2824 in TC03.
	TC09	• 2824 in TC08.
	TC14	• 2824 in TC13.
FC 2811, FC 2812, FC 2815, FC 2816, FC 2818, FC 2819 (ATM IOAs) <sup>3</sup>	1. TC05	• 2824 in TC03. • No ATM/2838/2723/2724 in TC01, TC02, or TC04. • Max of two 2745/2746s in TC01, TC02, and TC04.
	2. TC10	• 2824 in TC08. • No ATM/2838/2723/2724 in TC06, TC07, or TC09. • Max of two 2745/2746s in TC06, TC07, and TC09.
	3. TC15	• 2824 in TC13. • No ATM/2838/2723/2724 in TC11, TC12, or TC14. • Max of two 2745/2746s in TC11, TC12, and TC14.
FC 2838 (10/100 Mbps Ethernet HS IOA) <sup>4</sup> without SC.0222	1. TC05	• 2824 in TC03. • No ATM/2838/2723/2724 in TC01, TC02, or TC04. • Max of two 2745/2746s in TC01, TC02, and TC04.
	2. TC10	• 2824 in TC08. • No ATM/2838/2723/2724 in TC06, TC07, or TC09. • Max of two 2745/2746s in TC06, TC07, and TC09.
	3. TC15	• 2824 in TC13. • No ATM/2838/2723/2724 in TC11, TC12, or TC14. • Max of two 2745/2746s in TC11, TC12, and TC14.

Feature Card Type	Prioritized Allowable Slots <sup>1</sup>	Conditions which MUST BE MET to install feature in this slot:
FC 4800 (Cryptographic card)	1. TC05	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• No 4800 in TC04.</li> </ul>
	2. TC10	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• No 4800 in TC09.</li> </ul>
	3. TC15	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• No 4800 in TC14.</li> </ul>
	4. TC04	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• No 4800 in TC05.</li> </ul>
	5. TC09	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• No 4800 in TC10.</li> </ul>
	6. TC14	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• No 4800 in TC15.</li> </ul>
FC 2750, FC 2751, FC 2761 (ISDN, ISDN, Integrated Modem)	1. TC01	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• No 2750/2751/2761 in TC02, TC04, and TC05.</li> </ul>
	2. TC06	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• No 2750/2751/2761 in TC07, TC09, and TC10.</li> </ul>
	3. TC11	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• No 2750/2751/2761 in TC12, TC14, and TC15.</li> </ul>
	4. TC02	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• No 2750/2751/2761 in TC01, TC04, and TC05.</li> </ul>
	5. TC07	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• No 2750/2751/2761 in TC06, TC09, and TC10.</li> </ul>
	6. TC12	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• No 2750/2751/2761 in TC11, TC14, and TC15.</li> </ul>
	7. TC05	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• No 2750/2751/2761 in TC01, TC02, and TC04.</li> </ul>
	8. TC10	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• No 2750/2751/2761 in TC06, TC07, and TC09.</li> </ul>
	9. TC15	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• No 2750/2751/2761 in TC11, TC12, and TC14.</li> </ul>
	10. TC04	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• No 2750/2751/2761 in TC01, TC02, and TC05.</li> </ul>
	11. TC09	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• No 2750/2751/2761 in TC06, TC07, and TC10.</li> </ul>
	12. TC14	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• No 2750/2751/2761 in TC11, TC12, and TC15.</li> </ul>

Feature Card Type	Prioritized Allowable Slots <sup>1</sup>	Conditions which MUST BE MET to install feature in this slot:
FC 2723 (Ethernet IOA) without SC.0221 and FC 2724 (Token Ring LAN IOA) without SC 0220 <sup>5,6</sup>	1. TC01	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• No ATM/2838 in TC05.</li> <li>• Max of one 2723/2724 in TC02, TC04, and TC05.</li> </ul>
	2. TC06	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• No ATM/2838 in TC10.</li> <li>• Max of one 2723/2724 in TC07, TC09, and TC10.</li> </ul>
	3. TC11	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• No ATM/2838 in TC15.</li> <li>• Max of one 2723/2724 in TC12, TC14, and TC15.</li> </ul>
	4. TC02	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• No ATM/2838 in TC05.</li> <li>• Max of one 2723/2724 in TC01, TC04, and TC05.</li> </ul>
	5. TC07	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• No ATM/2838 in TC10.</li> <li>• Max of one 2723/2724 in TC06, TC09, and TC10.</li> </ul>
	6. TC12	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• No ATM/2838 in TC15.</li> <li>• Max of one 2723/2724 in TC11, TC14, and TC15.</li> </ul>
	7. TC05	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• Max of one 2723/2724 in TC01, TC02, and TC04.</li> </ul>
	8. TC10	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• Max of one 2723/2724 in TC06, TC07, and TC09.</li> </ul>
	9. TC15	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• Max of one 2723/2724 in TC11, TC12, and TC14.</li> </ul>
	10. TC04	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• No ATM/2838 in TC05.</li> <li>• Max of one 2723/2724 in TC01, TC02, and TC05.</li> </ul>
	11. TC09	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• No ATM/2838 in TC10.</li> <li>• Max of one 2723/2724 in TC06, TC07, and TC10.</li> </ul>
	12. TC14	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• No ATM/2838 in TC15.</li> <li>• Max of one 2723/2724 in TC11, TC12, and TC15.</li> </ul>

Feature Card Type	Prioritized Allowable Slots <sup>1</sup>	Conditions which MUST BE MET to install feature in this slot:
FC 2746 (Twinax)	1. TC01	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• If ATM/2838 in TC05, then max of one 2745/2746 in TC02 and TC04.</li> </ul>
	2. TC06	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• If ATM/2838 in TC10, then max of one 2745/2746 in TC07 and TC09.</li> </ul>
	3. TC11	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• If ATM/2838 in TC15, then max of one 2745/2746 in TC12 and TC14.</li> </ul>
	4. TC02	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• If ATM/2838 in TC05, then max of one 2745/2746 in TC01 and TC04.</li> </ul>
	5. TC07	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• If ATM/2838 in TC10, then max of one 2745/2746 in TC06 and TC09.</li> </ul>
	6. TC12	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• If ATM/2838 in TC15, then max of one 2745/2746 in TC11 and TC14.</li> </ul>
	7. TC05	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> </ul>
	8. TC10	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> </ul>
	9. TC15	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> </ul>
	10. TC04	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• If ATM/2838 in TC05, then max of one 2745/2746 in TC01 and TC02.</li> </ul>
	11. TC09	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• If ATM/2838 in TC10, then max of one 2745/2746 in TC06 and TC07.</li> </ul>
	12. TC14	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• If ATM/2838 in TC15, then max of one 2745/2746 in TC11 and TC12.</li> </ul>

Feature Card Type	Prioritized Allowable Slots <sup>1</sup>	Conditions which MUST BE MET to install feature in this slot:
FC 2745 (Comm)	1. TC01	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• If ATM/2838 in TC05, then max of one 2745/2746 in TC02 and TC04.</li> </ul>
	2. TC06	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• If ATM/2838 in TC10, then max of one 2745/2746 in TC07 and TC09.</li> </ul>
	3. TC11	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• If ATM/2838 in TC15, then max of one 2745/2746 in TC12 and TC14.</li> </ul>
	4. TC02	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• If ATM/2838 in TC05, then max of one 2745/2746 in TC01 and TC04.</li> </ul>
	5. TC07	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• If ATM/2838 in TC10, then max of one 2745/2746 in TC06 and TC09.</li> </ul>
	6. TC12	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• If ATM/2838 in TC15, then max of one 2745/2746 in TC11 and TC14.</li> </ul>
	7. TC05	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> </ul>
	8. TC10	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> </ul>
	9. TC15	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> </ul>
	10. TC04	<ul style="list-style-type: none"> <li>• 2824 in TC03.</li> <li>• If ATM/2838 in TC05, then max of one 2745/2746 in TC01 and TC02.</li> </ul>
	11. TC09	<ul style="list-style-type: none"> <li>• 2824 in TC08.</li> <li>• If ATM/2838 in TC10, then max of one 2745/2746 in TC06 and TC07.</li> </ul>
	12. TC14	<ul style="list-style-type: none"> <li>• 2824 in TC13.</li> <li>• If ATM/2838 in TC15, then max of one 2745/2746 in TC11 and TC12.</li> </ul>

**Notes:**

1. Slot numbers shown here for FC 5065 PCI Tower are preceded with a *T* to prevent confusion with the slot numbers in the system CEC frame.
2. If you have multiple cards from this group, place 2718 cards first, 2729 cards second.
3. Multiple cards from this group can be installed in any sequence; neither has priority over any other in the group.
4. These cards can be used with FC 2810 in the SPD environment. If the system has FC 2810, determine with the customer where the cards should be installed.
5. These cards can be used with FC 6617 or FC 6618 in the SPD environment. If the system has FC 6617 or FC 6618, determine with the customer where the cards should be installed.
6. If you have multiple cards from this group, place the 2723 cards first, then all the 2724 cards.

## MFIOP

Table 88. Multi Function I/O Controllers

Model	Card CCIN	Feature	Description	Comments
640	6751	9751	MFIOP	<ul style="list-style-type: none"><li>• Supports up to three IOAs, see table for this IOP.</li><li>• Controls DASD and Removable Media.</li><li>• Supports System IPL.</li><li>• Can support system console with appropriate IOA.</li><li>• Supports ECS with 2699 IOA.</li></ul>
S30	6754	9754		
730				
650				
S40				
740				
SB1				
600	none	none	MFIOP	<ul style="list-style-type: none"><li>• Built-in on backplane.</li><li>• PCI IOAs provide I/O function.</li><li>• DASD and Internal Removable Media controlled by PCI DASD/Tape controller in slot C11.</li><li>• Supports System IPL.</li><li>• Supports system console with appropriate PCI IOA in C09.</li><li>• Supports ECS with PCI IOA in C09.</li></ul>
S10				
620				
720				
S20				
170, 250	none	none	MFIOP	<ul style="list-style-type: none"><li>• Built-in on backplane.</li><li>• PCI IOAs provide I/O function.</li><li>• DASD and Internal Removable Media controlled by PCI DASD/Tape controller in slot C07/C11.</li><li>• Supports System IPL.</li><li>• Supports system console with appropriate PCI IOA in C09.</li><li>• Supports ECS with PCI IOA in C08/C09.</li></ul>

## PCI MFIOP IOAs

The Models 600/620, S10/S20, and 170 base system MFIOP supports the following adapters installed in PCI Slots:

Table 89. PCI MFIOP IOAs, by function type and PCI slot.

Function	PCI Slot		Feature Code	
	6xx/Sxx	170	6xx/Sxx	170
DASD/Tape	C11	C07	2726	2740
			9728	9728

Table 89. PCI MFIOPI IOAs, by function type and PCI slot. (continued)

DASD/Tape	C11		2740	
			2741	
Client Access Console	C09	C08	9721	9721
Operations Console	C09	C08	9721	9721
ECS	C09	C08	9720	9720
			9721	9721

## SPD MFIOPI IOAs

The FC 9751 (CCIN.6751) or FC 9754 (CCIN.6754) MFIOPI supports the following adapters installed in IOA slots A, B, and C:

Table 90. SPD MFIOPI IOAs, by function type and IOA slot.

IOA Slot	Comm	LAN	WSC
C (top)	2699	6149 / 9249	6180 / 9280
B	2699 / 9699	NA	6181
A	2699	6149 / 9249	6181 / 9381

## MFIOPI Comm IOAs

The FC 975x MFIOPIs use the following combination of IOAs and cables to support the following communication protocols:

Table 91. FC 9751/FC 9754 MFIOPI Communications IOAs, by interface type.

V.36	EIA-232/ V.24	V.35	X.21	Client Access Console	Operations Console
2699 w/ 0335 0336 0337	2699 w/ 0330 0331	2699 w/ 0338 0339 0340	2699 w/ 0338 0339 0340	n/a	n/a
9699 w/ 0335 0336 0337	9699 w/ 0330 0331	9699 w/ 0338 0339 0340	9699 w/ 0338 0339 0340	9699 w/ 0344	9699 w/ 0328

## Removable Media I/O Processor Cards

## Removable Media IOPs

Table 92. Tape IOPs

IOP Feature	Location of Tape Feature	Device Types Supported	Description
FC 2621 (SPD)	External	3995 7208 9348 9427-21x 2440 6368, 6369 3995-xxx	SCSI Tape Controller <ul style="list-style-type: none"> <li>2 SCSI ports (differential type).</li> <li>6368, 6369 installed in FC 5032 enclosure (Not allowed on Server models).</li> <li>connect 9427 to both ports for best performance.</li> </ul>
FC 2624 (SPD)	Internal	6379, 6380, 6390, 9331	Removable Media Device Controller <ul style="list-style-type: none"> <li>Not allowed in 640 or S30 system unit.</li> <li>internal removable media devices.</li> <li>external diskette (with FC 6146 IOA).</li> </ul>
FC 2644 (SPD)	External	3422 3430 3480 3490-Axx, Cxx, Dxx	<ul style="list-style-type: none"> <li>Adapter for 370 Channel type tape devices</li> <li>Not allowed on server models</li> </ul>
FC 6112 (SPD)	External	9347, 9331	<ul style="list-style-type: none"> <li>IPI-3 Magnetic Storage Device Controller</li> </ul>
FC 6501 (SPD)	External	3490-Exx, Fxx, Cxx 3570-Bxx 3590-B1x	SCSI DASD/Tape Controller <ul style="list-style-type: none"> <li>Requires interposer between the IOP and cable to device</li> <li>Not allowed on model SB1</li> </ul>
FC 6513 (SPD)	Internal	6380, 6379 6385, 6390 63A0	<ul style="list-style-type: none"> <li>Internal Tape Device Controller</li> <li>Not allowed on server models</li> </ul>
FC 6534 (SPD)	External	3490-Exx, Fxx, Cxx 3570-Bxx 3590 7208 9348 9427-2xx 3995-Cxx	External SCSI Tape Controller (SPD)

Table 92. Tape IOPs (continued)

IOP Feature	Location of Tape Feature	Device Types Supported	Description
FC 9751/9754 (SPD)  (CCIN 6751/6754)	Internal	6379, 6385 6380, 6390 63A0	MFIOP • internal device positions only • Not allowed in 620 / S20
FC 2718 (PCI)	External	7207 — 122	External SCSI Tape Controller
FC 2729 (PCI)	External	3490-Exx, Fxx, Cxx 3570-Bxx 3590 7208 9348 9427-2xx 3995-Cxx	External SCSI Tape Controller
FC 2726, FC 2728, FC 2740, FC 2741, FC 2748 (PCI)	Internal	Any internal	Combined Tape/DASD Controller

#### FC 2624 - Fixed Placement Internal Tape IOP:

Table 93. FC 2624 Internal Tape IOP - placement rules

System unit or Tower type	FC 2624 IOP fixed location	Device notes
System Units Model 650 Model S40 Model SB1	slot 4	D03 and D04 of Base I/O tower
System Units Model 640 Model S30	not allowed in system unit tower	must be installed in I/O Expansion Tower or Rack
System Unit Expansions Model 620 - FC 9364 Model S20 - FC 5064	not allowed in FC 9331 (SPD Cage)	must be installed in I/O Expansion Tower or Rack
I/O Expansion Towers FC 507x	slot 3	positions D01 - D04 (with maximum of 3 devices)

- Supports Internal Tape units in I/O Towers
- Supports External Diskette with FC 6146 IOA

### FC 6513 - Fixed Placement Internal Tape IOP:

Table 94. FC 6513 Internal Tape IOP - placement rules

System unit or Tower type	FC 6513 IOP fixed location	Device notes
System Units Model 650 Model S40	slot 4	D03 and D04 of Base I/O Tower
System Unit Expansions Model 620 - FC 9364 Model S20 - FC 5064 Model 740 - FC 5064	slot 2 of FC 9331 (SPD Cage)	D11, D12, and D13 of System Unit Expansion
I/O Expansion Towers FC 507x	slot 3	D01-D04

**FC 2621 - External SCSI Tape Controller:** If space is not available in the system unit, one or more of FC 2621 cards may be installed if balanced across the available buses in the I/O Expansion Towers FC 507x or Expansion rack FC 5044.

If a FC 2621 is driving a 3995 Optical Library Data Server, it may be installed in any IOP card slot.

**FC 2644 - External High Speed 370 Channel Tape Controller:** If space is not available in the system unit, one or more of these cards may be installed if balanced across the available buses in the Expansion towers.

### FC 6501, FC 6534 - External High Speed SCSI Tape Controllers:

- Attaches one external SCSI Tape Device.
- See rules for High Workload IOPs.

### PCI Tape Controller IOPs

Table 95. Removable Media/Tape PCI Controller Features

Feature	Controller Type	Tape Device Types Supported	Description
FC 2726, FC 2740, FC 2741	DASD/Tape - Internal Devices	Any internal	<ul style="list-style-type: none"><li>• Device Controller</li><li>• Controls:<ul style="list-style-type: none"><li>3 tape units in FC 5064/9364 System Unit Expansion</li><li>CD ROM and internal tape in System Unit</li></ul></li></ul>
FC 2729	Tape - External	3490-Exx, Fxx, Cxx 3570-Bxx 3590 7208 9348 9427-21x 3995-Cxx	External SCSI

Table 95. Removable Media/Tape PCI Controller Features (continued)

Feature	Controller Type	Tape Device Types Supported	Description
FC 9728 (CCIN.2728)	MFIOPI - Internal Devices	Any internal	<ul style="list-style-type: none"> <li>• Device Controller</li> <li>• Controls: 1 CD-ROM and 1 internal tape in System Unit</li> </ul>

## Removable Media Features

Table 96. Internal Removable Media Features

Feature	Reports as CCIN (desc)	ALT-IPL code	Used on System Model	IOP Feature Code (Max no. of dev)		Where device is allowed
				SPD	PCI	
Base Part	6320 (CDROM)	----	170		<ul style="list-style-type: none"> <li>• 2740(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			600, S10, 620, S20, 720		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			640, S30, 650, S40, SB1, 730, 740	6513(1)		System Unit
1349 (kit)	6379 (1.2GB-QIC) (F-1)	5516	600, S10		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(3)	<ul style="list-style-type: none"> <li>• 2726(3)</li> <li>• 2740(1)</li> <li>• 2741(3)</li> <li>• 2748(1)</li> <li>• 9728(1)</li> </ul>	System Unit or 5064/9364 System Unit Expansion
1350 (kit)	6380 (2.5GB-QIC) (F-1)	5517	600, S10		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(3)	<ul style="list-style-type: none"> <li>• 2726(3)</li> <li>• 2740(1)</li> <li>• 2741(3)</li> <li>• 2748(1)</li> <li>• 9728(1)</li> </ul>	System Unit or 5064/9364 System Unit Expansion
1355 (kit)	6385 (13.0GB-QIC) (F-2)	5518	600, S10		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(3)	<ul style="list-style-type: none"> <li>• 2726(3)</li> <li>• 2740(1)</li> <li>• 2741(3)</li> <li>• 2748(1)</li> <li>• 9728(1)</li> </ul>	System Unit or 5064/9364 System Unit Expansion

Table 96. Internal Removable Media Features (continued)

Feature	Reports as CCIN (desc)	ALT-IPL code	Used on System Model	IOP Feature Code (Max no. of dev)		Where device is allowed
				SPD	PCI	
1356 (kit)	6386 (63A0) (25.0GB-QIC) (F-2)	5518	600, S10		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(3)	<ul style="list-style-type: none"> <li>• 2726(3)</li> <li>• 2740(1)</li> <li>• 2741(3)</li> <li>• 2748(1)</li> <li>• 9728(1)</li> </ul>	System Unit or 5064/9364 System Unit Expansion
1360 (kit)	6390 (7.0GB-8mm) (F-1)	5514	600, S10		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(3)	<ul style="list-style-type: none"> <li>• 2726(3)</li> <li>• 2740(1)</li> <li>• 2741(3)</li> <li>• 2748(1)</li> <li>• 9728(1)</li> </ul>	System Unit or 5064/9364 System Unit Expansion
1379 (kit)	6379 (1.2GB-QIC) (F-1)	5516	620, S20, 720	<ul style="list-style-type: none"> <li>• 2624(3)</li> <li>• 6513(4)</li> </ul>		507x I/O Expansion Towers
			640, S30, 650, S40, SB1, 730, 740	<ul style="list-style-type: none"> <li>• MFIOP(1)</li> <li>• 2624(1)</li> <li>• 6513(1)</li> </ul>		System Unit or 507x I/O Expansion Towers
1380 (kit)	6380 (1.2GB-QIC) (F-1)	5517	620, S20, 720	<ul style="list-style-type: none"> <li>• 2624(3)</li> <li>• 6513(4)</li> </ul>		507x I/O Expansion Towers
			640, S30, 650, S40, SB1, 730, 740	<ul style="list-style-type: none"> <li>• MFIOP(1)</li> <li>• 2624(1)</li> <li>• 6513(1)</li> </ul>		System Unit or 507x I/O Expansion Towers
4482 (device)	63A0 (4.0GB-QIC) (F-1)	5506	620, S20, 720, 640, S30, 730, 650, S40, 740, SB1		2748(2)	FC 5065 PCI Expansion Tower
4482 (device)	63A0 (16.0GB-QIC) (F-1)	5531	620, S20, 720, 640, S30, 730, 650, S40, 740, SB1		2748(2)	FC 5065 PCI Expansion Tower
4482 (device)	63A0 (25.0GB-QIC) (F-2)	5536	620, S20, 720, 640, S30, 730, 650, S40, 740, SB1		2748(2)	FC 5065 PCI Expansion Tower
6368 (device)	6379 (2.5GB-QIC) (F-1)	5516	640, S30, 650, S40, SB1, 730, 740	2621(4)		FC 5032 Removable Media Cluster Box

Table 96. Internal Removable Media Features (continued)

Feature	Reports as CCIN (desc)	ALT-IPL code	Used on System Model	IOP Feature Code (Max no. of dev)		Where device is allowed
				SPD	PCI	
6369 (device)	6380 (2.5GB-QIC) (F-1)	5517	640, S30, 650, S40, SB1, 730, 740	2621(4)		FC 5032 Removable Media Cluster Box
6380 (device)	6380 (2.5GB-QIC) (F-1)	5517	620, S20, 720	<ul style="list-style-type: none"> <li>• 2624(3)</li> <li>• 6513(4)</li> </ul>		507x I/O Expansion Towers
			640, S30, 650, S40, SB1, 730, 740	<ul style="list-style-type: none"> <li>• MFIO(1)</li> <li>• 2624(1)</li> <li>• 6513(1)</li> </ul>		System Unit or 507x I/O Expansion Towers
6381 (device)	63A0 (2.5GB-QIC) (F-1)	5517	170		<ul style="list-style-type: none"> <li>• 2740(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(4)		507x I/O Expansion Towers
			640, S30, 650, S40, SB1, 730, 740	<ul style="list-style-type: none"> <li>• MFIO(1)</li> <li>• 6513(4)</li> </ul>		System Unit or 507x I/O Expansion Towers
6382 (device)	63A0 (4.0GB-QIC) (F-1)	5506	170		<ul style="list-style-type: none"> <li>• 2740(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(4)		507x I/O Expansion Towers
			640, S30, 650, S40, SB1, 730, 740	<ul style="list-style-type: none"> <li>• MFIO(1)</li> <li>• 6513(4)</li> </ul>		System Unit or 507x I/O Expansion Towers
6383 (device)	63A0 (16.0GB-QIC)	5531	170		<ul style="list-style-type: none"> <li>• 2740(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(4)		507x I/O Expansion Towers
			640, S30, 650, S40, SB1, 730, 740			System Unit or 507x I/O Expansion Towers
6385 (device)	6385 (13.0GB-QIC) (F-2)	5518	170		<ul style="list-style-type: none"> <li>• 2740(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(4)		507x I/O Expansion Towers
			640, S30, 650, S40, SB1, 730, 740	<ul style="list-style-type: none"> <li>• MFIO(1)</li> <li>• 6513(4)</li> </ul>		System Unit or 507x I/O Expansion Towers

Table 96. Internal Removable Media Features (continued)

Feature	Reports as CCIN (desc)	ALT-IPL code	Used on System Model	IOP Feature Code (Max no. of dev)		Where device is allowed
				SPD	PCI	
6386 (device)	6386 (63A0) (25.0GB-QIC) (F-2)	5518	170		<ul style="list-style-type: none"> <li>• 2740(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(4)		507x I/O Expansion Towers
			640, S30, 650, S40, SB1, 730, 740	<ul style="list-style-type: none"> <li>• MFIOP(1)</li> <li>• 6513(4)</li> </ul>		System Unit or 507x I/O Expansion Towers
6390 (device)	6390 (7.0GB-8mm) (F-1)	5514	620, S20, 720	<ul style="list-style-type: none"> <li>• 2624(3)</li> <li>• 6513(4)</li> </ul>		507x I/O Expansion Towers
			640, S30, 650, S40, SB1, 730, 740	<ul style="list-style-type: none"> <li>• MFIOP(1)</li> <li>• 2624(1)</li> <li>• 6513(1)</li> </ul>		System Unit or 507x I/O Expansion Towers
6481 (device)	63A0 (2.5GB-QIC) (F-1)	5517	600, S10		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(3)	<ul style="list-style-type: none"> <li>• 2726(3)</li> <li>• 2740(1)</li> <li>• 2741(3)</li> <li>• 2748(1)</li> <li>• 9728(1)</li> </ul>	System Unit or 5064/9364 System Unit Expansion
6482 (device)	63A0 (4.0GB-QIC) (F-1)	5506	600, S10		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(3)	<ul style="list-style-type: none"> <li>• 2726(3)</li> <li>• 2740(1)</li> <li>• 2741(3)</li> <li>• 2748(1)</li> <li>• 9728(1)</li> </ul>	System Unit or 5064/9364 System Unit Expansion
6485 (device)	6385 (13.0GB-QIC) (F-2)	5518	600, S10		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(3)	<ul style="list-style-type: none"> <li>• 2726(3)</li> <li>• 2740(1)</li> <li>• 2741(3)</li> <li>• 2748(1)</li> <li>• 9728(1)</li> </ul>	System Unit or 5064/9364 System Unit Expansion

Table 96. Internal Removable Media Features (continued)

Feature	Reports as CCIN (desc)	ALT-IPL code	Used on System Model	IOP Feature Code (Max no. of dev)		Where device is allowed
				SPD	PCI	
6486 (device)	63A0 (25.0GB-QIC) (F-1)	5518	600, S10		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720		<ul style="list-style-type: none"> <li>• 2726(3)</li> <li>• 2740(1)</li> <li>• 2741(3)</li> <li>• 2748(1)</li> <li>• 9728(1)</li> </ul>	System Unit or 5064/9364 System Unit Expansion
6490 (device)	6390 (7.0GB-8mm) (F-1)	5514	600, S10		<ul style="list-style-type: none"> <li>• 2726(1)</li> <li>• 274x(1)</li> <li>• 9728(1)</li> </ul>	System Unit
			620, S20, 720	6513(3)	<ul style="list-style-type: none"> <li>• 2726(3)</li> <li>• 2740(1)</li> <li>• 2741(3)</li> <li>• 2748(1)</li> <li>• 9728(1)</li> </ul>	System Unit or 5064/9364 System Unit Expansion

## External Tape and Optical Subsystems

Table 97. Tape Device Information

Device	IOP	Max Number of Devices per IOP	Comments	Model	Minimum OS/400 Level
<i>External Tape Units</i>					
2440	2621	2	Can combine with another D/T2440, D/T7208, D/T9348, or D/T9427 for a total of two devices per IOP		V2R1M0
3422	2644	1	Considered to be a high speed tape. Controller address should be 7 if AIPL device.	n/a	V2R1M0
3430	2644	1	Considered to be a high speed tape. Controller address should be 7 if AIPL device.	n/a	V2R1M0
3480	2644	1	Considered to be a high speed tape. Controller address should be 7E if AIPL device.  With 3Mb attachment, controller address should be set to 7C if AIPL device.	n/a	V2R1M0
3490	2644	1	high speed tape	AXX BXX DXX	V2R1M0
				CXX <sup>3</sup>	V2R2M0

Table 97. Tape Device Information (continued)

Device	IOP	Max Number of Devices per IOP	Comments	Model	Minimum OS/400 Level
3490	6501, 6534	2	high speed tape	CXX <sup>3</sup>	V2R2M0
				EXX	V2R3M0
				FXX	V3R1M0 (IMPI), V3R7M0 (RISC)
3570	6501, 6534	2	<ul style="list-style-type: none"> <li>Considered to be a high speed tape.</li> <li>SCSI attached.</li> </ul>	BXX CXX	Same as 3490 FXX
3590	6501,6534	2	<ul style="list-style-type: none"> <li>Considered to be a high speed tape.</li> <li>SCSI attached</li> </ul>	B1x	Same as 3490 FXX
3995	2621	1	Optical drive	042	V2R1M1
				142	V2R3M0
				A43	V2R3M0
				043	
3995	2729	1	Optical Drive	143	V4R2
				Axx	
				0xx	
				1xx	
3995	2729	1	Optical Drive	Cxx	
9347	6112	2	<ul style="list-style-type: none"> <li>Combines up to two D/T9331 with up to two D/T9347 units. No DASD with tape or diskette.</li> <li>Not more than two D/T9347 allowed per IOP.</li> </ul>		V2R1M0
7208	2621	2	Can combine with another D/T7208, D/T2440, D/T9348, or D/T9427 for a total of two devices per IOP	002	V2R1M0
				012	V2R2M0
				232	
7208	2621	2	Can combine with another D/T7208, D/T2440, D/T9348, or D/T9427 for a total of two devices per IOP	222	V2R1M0
9348	2621	2	Can combine with another D/T9348, D/T2440, D/T7208, or D/T9427 for a total of two devices per IOP	n/a	V2R1M0
9427	2621	1	Tape library Model 210 is standalone. Model 211 is rack mount.	210	V3R1M0
				211	

## External Tape Device Cabling Notes

### 3494 Cabling:

- In addition to normal device cabling, a 3494 1/2 inch Cartridge Tape Library requires an RS232 communications line connected to a communications controller on the system.
- The following models of tape units can install in a 3494 Library Enclosure:
  - 3490-CxA

## FC 5032 Removable Media Enclosure:

FC 5032 device slots as viewed from the front of the rack

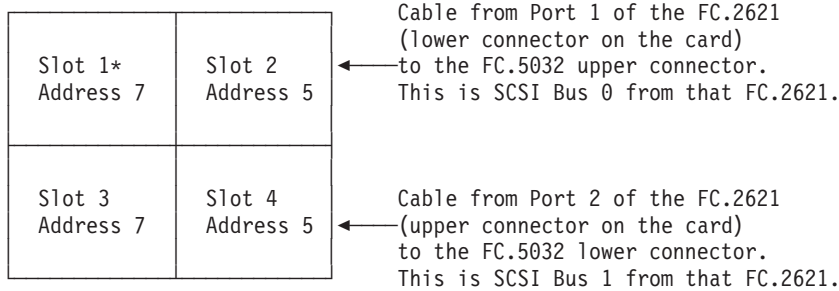


Figure 106. FC 5032 Removable Media Enclosure Device Addresses

## Diskette Features

Table 98. Diskette Devices and IOPs.

Device	Media Size (in)	IOP Type	IOA Type	Restrictions	Comments
9331-001 9331-002	8 / 5.25	6112	n/a	<ul style="list-style-type: none"> <li>Not allowed on Server Models.</li> <li>Rack-type units.</li> <li>Maximum of two per 6112 IOP.</li> </ul>	Supports up to two D/T9347 in combination with up to two D/T9331 units.
9331-011 9331-012	8 / 5.25	2624	6146	<ul style="list-style-type: none"> <li>Stand-alone diskette units only.</li> <li>Maximum of one device and adapter per 2624 IOP.</li> </ul>	Uses Cable CIN 9886 (P/N 46G3658)

## Auxiliary Storage (DASD)

### PCI DASD Controllers

Table 99. PCI DASD Controllers — Models 600, 620, S10, S20, 720

PCI DASD Controller	Location of DASD	Description
FC 2726, FC 2741, FC 2748	Internal (System Unit)	High Availability DASD Controller (Internal RAID), write cache; <ul style="list-style-type: none"> <li>Supports up to 3 RAID arrays</li> <li>Supports up to 15 disks in system unit and system expansion unit locations.</li> <li>Installs in slots C11 or E16</li> <li>Supports SCSI types F-1/F-2/U-2</li> </ul>

Table 99. PCI DASD Controllers – — Models 600, 620, S10, S20, 720 (continued)

PCI DASD Controller	Location of DASD	Description
FC 2748	Internal (FC 5065 PCI Expansion Tower)	High Availability DASD Controller (Internal RAID), write cache; <ul style="list-style-type: none"> <li>• Supports up to 3 RAID arrays</li> <li>• Supports up to 15 disks in system unit and system expansion unit locations.</li> <li>• Installs in slots C04, C09, or C14</li> <li>• Supports Ultra 2 devices (U2-2) in FC 5065 Expansion as well as SCSI types F-1/F-2/U-2</li> </ul>
FC 2728, FC 9728	Internal (System Unit)	Base DASD Controller: <ul style="list-style-type: none"> <li>• Does not support RAID arrays</li> <li>• Supports up to 5 disks in locations L01-L05</li> <li>• Allowed in slot C11</li> <li>• Supports SCSI types F-1/F-2/U-2</li> </ul>
FC 2740	Internal (System Unit)	High Availability DASD Controller (Internal RAID), 4 MB cache; <ul style="list-style-type: none"> <li>• Supports up to 2 RAID arrays</li> <li>• Supports up to 10 disks in system unit and system expansion unit locations.</li> <li>• Installs in slots C11 or E16</li> <li>• Supports SCSI types F-1/F-2/U-2</li> </ul>

### PCI DASD Controller Placement (Models 600, 620, S10, S20)

- Base disk controller installs in slot C11.
  - Slot C11 controls System unit disk locations L01 through L05, and F01 through F15.
- System Unit Expansion (FC 5064/FC 9364) supports a Disk Controller in slot E16.
  - Slot E16 controls System Unit Expansion disk locations F31 through F35, F41 through F45, and F51 through F55.

Table 100. PCI DASD Controllers – — Model 170

PCI DASD Controller	Location of DASD	Description
FC 2740, FC 2741, FC 2748	Internal	High Availability DASD Controller (Internal RAID), 4 MB cache; <ul style="list-style-type: none"> <li>• Supports up to 2 RAID arrays</li> <li>• Supports up to 10 disks in system unit and system expansion unit locations.</li> <li>• Installs in slots C07</li> <li>• Supports SCSI types F-1/F-2/U-2</li> <li>• Required for disks in locations F11-F16.</li> </ul>
FC 9728	Internal	Base DASD Controller: <ul style="list-style-type: none"> <li>• Does not support RAID arrays</li> <li>• Supports up to 4 disks in locations L01-L04</li> <li>• Allowed in slot C07</li> <li>• Supports SCSI types F-1/F-2/U-2</li> </ul>

### PCI DASD Controller Placement (Model 170)

You can use only one DASD controller per system. It always goes in slot C07.

## SPD DASD IOPs

Table 101. DASD SPD IOPs

DASD IOP (Feature Code)	Location of DASD	Description
FC 6500	External	DASD Controller for 9337-0xx and 9337-1xx External DASD
FC 6501	External	DASD Controller for 9337-2xx, 9337-4xx, or 9337-5xx
FC 6502	Internal	High Availability DASD IOP/Controller (Internal RAID), 2 MB cache
FC 6512	Internal	High Availability DASD IOP/Controller (Internal RAID), 4 MB cache
FC 6530	Internal	SCSI Internal DASD IOP (Non-Raid)
FC 6532	Internal	High Availability DASD IOP/Controller (Internal RAID), 4 MB cache
FC 6533	Internal	High Availability DASD IOP/Controller (Internal RAID), 4 MB cache
FC 9751/9754	Internal	MFIO with HA DASD Controller
FC 6751/6754		

### DASD IOP Placement

- Install External DASD IOPs in a balanced fashion across the number of SPD I/O buses on a system. Start with the bus expansion units (racks or towers), if any are present. Balance the number of IOPs on these before installing any External DASD IOPs on Bus 0.
- You can install internal DASD IOPs *only* in the card slots shown in the system or tower diagram.
- See the SPD Bus rules in “SPD Bus IOP Rules — High Workload IOPs” on page 308 for DASD IOP placement.
- When you require more DASD IOPs, maintain a balance between buses as much as possible.

### Extended Adaptive Cache Features

- Feature works with FC 2748 to provide “Large Read Cache” function (Fast access, data buffer, minimum latency)
- Solid state storage device
- Form factor like other DASD units

Table 102. Extended Adaptive Cache Features

Feature Code	Description / Rules
FC 4331	<ul style="list-style-type: none"> <li>• Allowed only in slots D01, D06, D11, D16, D21, D26, D31, D36, D46 of FC 5065 PCI Expansion Tower.</li> <li>• Uses one DASD slot.</li> <li>• Requires FC 2748</li> <li>• 1.6GB capacity</li> </ul>
FC 6831	<ul style="list-style-type: none"> <li>• Not allowed in slot L01 of system unit</li> <li>• Uses one DASD slot.</li> <li>• Requires FC 2748</li> <li>• 1.6GB capacity</li> </ul>

## Internal DASD

Table 103. Internal DASD IOPs - SPD Type

DASD IOP Feature Code (CCIN)	Devices Supported (CCIN)	Maximum number of DASD units	Comments
6502	6602, 6603, 6605, 6606, 6607, 6650, 6652, 6713, 6714, 6906, 6907	16	<ul style="list-style-type: none"> <li>Disk Expansion Unit or Storage Expansion Tower DASD only</li> <li>includes 2MB non-volatile cache</li> <li>Supports 2 parity sets (2 RAID arrays)</li> <li>Supports F-1 and F-2 SCSI units</li> </ul>
6512	6602, 6603, 6605, 6606, 6607, 6650, 6652, 6713, 6714, 6906, 6907	16	<ul style="list-style-type: none"> <li>Supports 2 parity sets (2 RAID arrays)</li> <li>Disk Expansion Unit or Storage Expansion Tower DASD only</li> <li>includes 4MB non-volatile cache</li> <li>Supports F-1 and F-2 SCSI units</li> </ul>
6530	6602, 6603, 6605, 6606, 6607, 6650, 6652, 6713, 6714, 6906, 6907	16	<ul style="list-style-type: none"> <li>Disk Expansion Unit or Storage Expansion Tower DASD only</li> <li>Does not support device parity protection</li> <li>Supports F-2 SCSI units</li> </ul>
6532, 6533	6602, 6603, 6605, 6606, 6607, 6650, 6652, 6713, 6714, 6906, 6907	16	<ul style="list-style-type: none"> <li>Disk Expansion Unit or Storage Expansion Tower DASD only</li> <li>Supports F-1, F-2, and U-2 SCSI units</li> <li>includes 4MB non-volatile cache</li> <li>Supports 4 parity sets (4 RAID arrays)</li> </ul>
9751 (6751), 9754 (6754)	6602, 6603, 6605, 6606, 6607, 6650, 6652, 6713, 6714, 6906, 6907	20	<ul style="list-style-type: none"> <li>Supports F-1, F-2, and U-2 SCSI units</li> <li>Requires 2 SPD Bus IOP slots</li> <li>includes 4MB non-volatile cache</li> <li>Supports 4 parity sets (RAID arrays)</li> </ul>

Internal DASD may be in a System Unit, Storage Tower, or installed in one of the Disk Expansion Units:

For 170, 7xx, 6xx and SB1 Models, you may add Internal DASD concurrently to the system without powering down the system.

## Internal DASD Devices

Table 104. Model 600/S10/620/S20 Internal DASD Devices

Reported DASD CCIN	Capacity	600, 620, S10, S20 System Unit Feature Code	Expansion Tower Feature Code	SCSI Bus Type-Width	Mirroring <sup>1</sup>	Parity Set <sup>2</sup>
6602, 2802	1.03GB	1312	1602	F-1	2	A
6602, 2802	1.03GB	1322	6652	F-2	2	A
6603	1.96GB	1313	1603	F-1	3	B
6603	1.96GB	1323	6650	F-2	3	B
6605	1.03GB	1325	6605	F-2	2	A

Table 104. Model 600/S10/620/S20 Internal DASD Devices (continued)

Reported DASD CCIN	Capacity	600, 620, S10, S20 System Unit Feature Code	Expansion Tower Feature Code	SCSI Bus Type- Width	Mirroring <sup>1</sup>	Parity Set <sup>2</sup>
6606	1.96GB	1326	6606	F-2	3	B
6606	1.96GB	6806 1336	6906	U-2	3	B
6607	4.19GB	1327	6607	F-2	4	C
6607	4.19GB	6807 1337	6907	U-2	4	C
6713	8.58GB	6813 1333	6713	U-2	5	D
6714	17.54GB	6814 1334	6714	U-2	6	E
NOTE: 1. Disk Unit features with the same "number" in this column can be mirrored to each other. 2. Disk Unit features with the same "letter" in this column can be put into the same parity set.						

Table 105. Model 600/S10/620/S20 Internal DASD Feature Application

DASD Feature	600, 620, S10, S20 System Unit	FC 5064/ FC 9364 System Unit Expansion	FC 5052 Disk Storage Expansion Unit	FC 5058 Disk Storage Expansion Unit	FC 5082, 5080 Storage Tower	FC 5083, 5081 Storage Tower	FC 5065 PCI Expansion Tower
1312, 1313, 1322, 1323, 1325, 1326, 1327, 1333, 1334, 1336, 1337, 6806, 6807, 6813, 6817, 6818, 6824, 6831, 8813, 8817, 8818, 8824, 9707	X	X					
1602, 1603			X	X			
6605, 6606, 6607, 6650, 6652, 6713, 6714, 6717, 6718, 6906, 6907			X	X	X	X	
4308, 4314, 4317, 4324, 4331							X

Table 106. Model 640/S30/650/S40/SB1 Internal DASD Devices

Reported DASD CCIN	Capacity	Feature Codes	SCSI Bus Type-Width	Mirroring <sup>1</sup>	Parity Set <sup>2</sup>
6602	1.03GB	6652	F-2	2	B
6602	1.03GB	1602	F-1	2	B
6605	1.03GB	6605	F-2	2	B

Table 106. Model 640/S30/650/S40/SB1 Internal DASD Devices (continued)

Reported DASD CCIN	Capacity	Feature Codes	SCSI Bus Type-Width	Mirroring <sup>1</sup>	Parity Set <sup>2</sup>
6603	1.96GB	6650	F-2	3	C
6603	1.96GB	1603	F-1	3	C
6606	1.96GB	6606	F-2	3	C
6607	4.19GB	6607	F-2	4	D
6606	1.96GB	6906	U-2	3	C
6607	4.19GB	6907	U-2	4	D
6713	8.58GB	6713	U-2	5	D
6714	17.54GB	6714	U-2	6	E

NOTE:

1. Disk Unit features with the same "number" in this column can be mirrored to each other.
2. Disk Unit features with the same "letter" in this column can be put into the same parity set.

Table 107. DASD Internal Device Placement

SCSI Bus Capability	Allowed Locations	Preferred Locations
F-1 (Fast-1)	<ul style="list-style-type: none"> <li>• K01-K07 of FC 5052, FC 5057, or FC 5058 disk expansion units</li> <li>• L01-L04 or F01-F07 of Model 640/S30 System Units</li> <li>• K01-K07 or 11A-13B of Model 650/S40 System Units</li> <li>• L01-L05 or F01-F55 of Model 600/620/S10/S20 System Units</li> </ul>	<ul style="list-style-type: none"> <li>• K01-K07 of FC 5052 disk expansion unit</li> </ul>
F-2 (Fast-2)	any	<ul style="list-style-type: none"> <li>• FC 5070, FC 5072 I/O Towers</li> <li>• FC 5080, FC 5082 Storage Towers</li> <li>• FC 5052 Disk Expansion Units</li> </ul>
U-2 (Ultra-2)	any	<ul style="list-style-type: none"> <li>• Any System Unit or System Unit Expansion Location</li> <li>• FC 5071, FC 5073 I/O Towers</li> <li>• FC 5081, FC 5083 Storage Towers</li> <li>• FC 5057, FC 5058 - 16 Disk Expansion Units</li> <li>• FC 5055 - 8 Disk Expansion Units</li> </ul>
U-2	any	<ul style="list-style-type: none"> <li>• FC 5065 PCI Expansion Tower</li> </ul>

### Disk Expansion Unit DASD

- You can install DASD devices that are **1 byte-wide SCSI only in K01-K07**.
- You can install DASD devices that are **2 byte-wide SCSI in any** position K01 through K16 of FC 505x. New devices are of this type.
- You must install devices sequentially from positions K01 to K16 (FC 5052) in the Disk Expansion Units.

## External DASD

Table 108. External DASD Units-System 6xx/Sxx

Device	Model	Capacity (Fully configured)	Minimum OS/400 Level	IOP	Comments
9337-0XX	010, 015	3.79 GB	V2R2M0	6500	<ul style="list-style-type: none"> <li>External DASD only</li> <li>No other devices can connect to this IOP.</li> <li>Maximum of 1 9337 unit allowed per IOP</li> <li>Maximum of 7 actuators per box</li> </ul>
	020, 025	3.79 GB			
	040	13.77 GB	V2R2M0+		
9337-1XX	110, 115	3.25 GB	V2R2M0	6500	<ul style="list-style-type: none"> <li>External DASD only</li> <li>No other devices can connect to this IOP.</li> <li>Maximum of 1 9337 unit allowed per IOP</li> <li>Maximum of 7 actuators per box</li> </ul>
	120, 125	5.82 GB			
	140	11.80 GB	V2R2M0+		
9337-2XX	210, 215	4.34 GB <sup>1</sup>	V2R2M0 <sup>82</sup>	6501	<ul style="list-style-type: none"> <li>No other devices can be connected to this IOP in combination with DASD devices.</li> <li>Maximum of 2 9337 units allowed per IOP</li> </ul>
	212, 217	3.79 GB <sup>2</sup>			
	220, 225	7.76 GB <sup>1</sup>			
	222, 227	6.79 GB <sup>2</sup>			
	240	15.74 GB <sup>1</sup>			
	242	13.77 GB <sup>2</sup>			
9337-4XX	440	15.7 GB <sup>1</sup>	V3R0M5 <sup>84</sup>	6501	<ul style="list-style-type: none"> <li>No other devices can be connected to this IOP in combination with DASD devices.</li> <li>Maximum of 2 9337 units allowed per IOP.</li> </ul>
	442	13.77 GB <sup>2</sup>			
	480	13.5 GB <sup>1</sup>			
	482	29.36 GB <sup>2</sup>			
	420	7.76 GB <sup>1</sup>			
	422	6.79 GB <sup>2</sup>			
9337-5XX	54x	15.7 GB <sup>1</sup>	V3R0M5 <sup>84</sup>	6501	<ul style="list-style-type: none"> <li>No other devices can be connected to this IOP in combination with DASD devices.</li> <li>Maximum of 2 9337 units allowed per IOP</li> </ul>
	54x	13.77 GB <sup>2</sup>			
	58x	33.5 GB <sup>1</sup>			
	58x	29.36 GB <sup>2</sup>			

Table 108. External DASD Units-System 6xx/Sxx (continued)

Device	Model	Capacity (Fully configured)	Minimum OS/400 Level	IOP	Comments
<p><b>Note:</b></p> <p><sup>1</sup> Without device parity protection.</p> <p><sup>2</sup> With device parity protection.</p> <p><sup>3</sup> This device requires OS/400 level V2R3M0 in addition to PTFs SF15518 and MF06650 to be applied or superseded (previous releases of OS/400 are also supported with different PTFs).</p> <p><sup>82</sup> This device requires PTFs in addition to the base operating system. OS/400 level V2R2M0 with Feature Code 1982.</p> <p><sup>84</sup> This device requires PTFs in addition to the base operating system. OS/400 level V3R0M5 with Feature Code 1984. This can be verified with the following PTFs: LICPGM 5763-999(RE01984) and LICPGM 5763-SS1(AP01984) to be applied or superseded.</p> <p><sup>4</sup> 9336 units are not supported on RISC systems with device address of 0 through 3. Set 9336 unit addresses to a value of 4 or greater.</p>					

## Mirroring

AS/400 provides **Mirroring** to allow a high level of protection for the customer's data.

Mirroring is the capability to always maintain a current copy. Mirroring tolerates a failure of one or possibly more DASD units at one time.

- See Table 104 on page 344, or Table 106 on page 345 for which disk unit types can mirror.

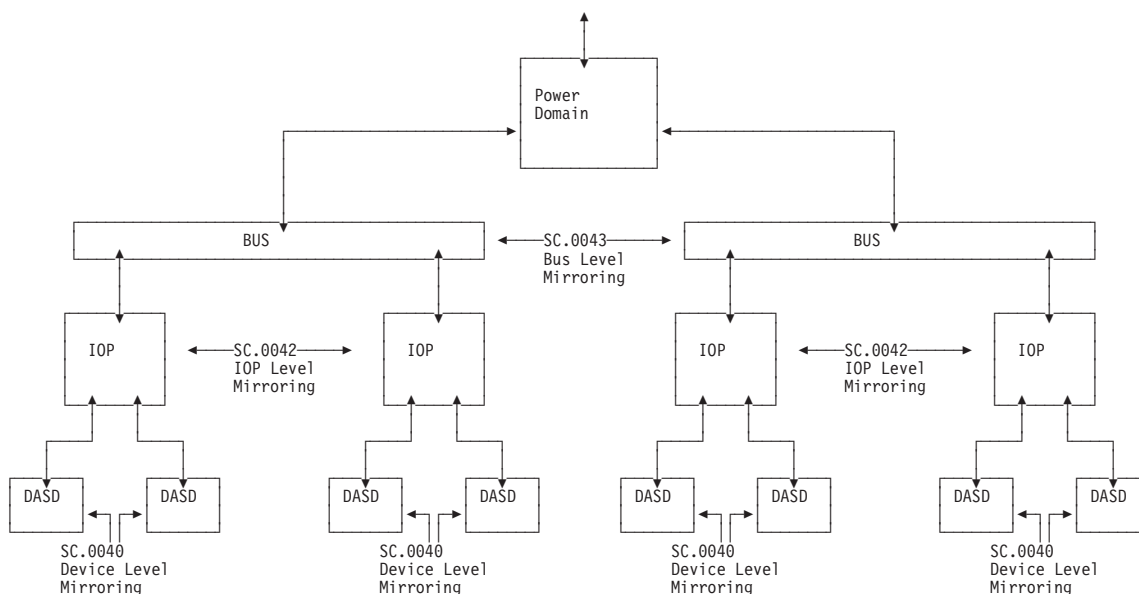


Figure 107. Mirroring level diagram

Table 109. Standard Load Source Mirroring

Model	Load Source Slot	Slots where second unit of mirrored pair is allowed
170	L01	L02, L03, L04
600, 620, S10, S20	L01	L02, L03, L04, L05
640, S30	L01	L02, L03, L04
650, S40, SB1*	11A	11B, 13A, 13B
* Mirroring not allowed on Model SB1 with FC 9907 disk unit.		

Reference the *Backup and Recovery* for more information about mirroring, including remote load source mirroring.

## Device Parity and Mirroring

Devices protected by device parity protection cannot become part of a mirrored pair. Mirrored devices and device parity devices can be in the same ASP (Auxiliary Storage Pool).

## Mirroring levels

Table 110. Mirroring Levels

Level	Provides protection against...	Restrictions
All levels	<ul style="list-style-type: none"> <li>DASD failure</li> </ul>	<ul style="list-style-type: none"> <li>Must have same capacity DASD devices</li> <li>Must have devices in the same Auxiliary Storage Pool (ASP)</li> <li>Must have enough devices to provide each half of the mirrored storage</li> </ul>
Device Level SC.0040	<ul style="list-style-type: none"> <li>DASD failure</li> </ul>	
IOP Level SC.0042	<ul style="list-style-type: none"> <li>DASD failure</li> <li>IOP Failure</li> </ul>	<ul style="list-style-type: none"> <li>Must have enough IOPs to provide both halves of the mirrored storage.</li> <li>Must have equal configurations of DASD under each IOP.</li> </ul>
BUS Level SC.0043	<ul style="list-style-type: none"> <li>DASD failure</li> <li>IOP Failure</li> <li>Bus or Tower Failure</li> </ul>	<ul style="list-style-type: none"> <li>Must have enough buses and enough IOPs to provide both halves of the mirrored storage.</li> <li>IOPs being mirrored must be on different buses.</li> <li>Must have equal configurations of DASD under each IOP.</li> </ul>
Power Domain	<ul style="list-style-type: none"> <li>DASD failure</li> <li>IOP Failure</li> <li>Bus or Tower Failure</li> <li>Single Power Source Failure</li> </ul>	<p>See Bus Level Mirroring.</p> <ul style="list-style-type: none"> <li>For Advanced Series Models, Tower and Bus are in the same power domain.</li> </ul>

## Device Parity Protection

Device-level parity protection is SC.0044.

### MT 9337 Device Parity Protection

The 9337 offers several models which include Device Parity Protection (RAID) capability. See the following:

- *Backup and Recovery* for using Device Parity Protection with the 9337.

## High Availability DASD Controller Information

Reference *Backup and Recovery* for more information about Device Parity.

Table 111. High Availability Controller Information

HA Controller	Packaging Bus/Type	Number of Devices Supported	Number of Parity Sets (Arrays) Supported
6502	SPD	16	2
6512	SPD	16	2
6532, 6533	SPD	16	4
6752/9751 (MFIOP)	SPD	20	4
2726	PCI	15	3
2740	PCI	10	2
2741	PCI	15	3
2748	PCI	15	3

Device Parity Protection, commonly referred to as **RAID** protection, provides protection against failure of a **single** DASD device within a group of DASD devices. The group is referred to as a Data Protection Parity Set (or just "parity set"). All devices in a parity set must be devices of the **same capacity**.

Devices are grouped into parity sets based on selection rules programmed into the HA Controller IOP, see Table 112 on page 351.

When a parity set is formed, part of the storage on either 4 or 8 of the set member devices is used to store the "parity" needed to protect the data. These are parity devices.

Parity devices report a lower capacity to the system than non-parity devices. All devices in a data protection parity set report a different model number than unprotected devices, as shown below.

### Model Description

- 030 unprotected or mirrored unit of a type not supported in HA Controller parity set. (520 byte device)
- 050 unprotected or mirrored unit of a type supported in HA Controller parity set membership (522 byte device). Data compression-inactive.
- 060 unprotected or mirrored unit of a type supported in HA Controller parity set membership (522 byte device). Data compression-active.
- 070 non-parity unit of a parity set (full capacity, 522 byte device). Data compression-inactive.
- 072 parity unit in parity set with 8 parity units ( $\frac{1}{8}$  capacity, 522 byte device). Data compression-inactive.
- 074 parity unit in parity set with 4 parity units ( $\frac{3}{4}$  capacity, 522 byte device). Data compression-inactive.
- 080 non-parity unit of a parity set (full capacity, 522 byte device). Data compression-active.

- 082 parity unit in parity set with 8 parity units ( $\frac{7}{8}$  capacity, 522 byte device). Data compression-active.
- 084 parity unit in parity set with 4 parity units ( $\frac{3}{4}$  capacity, 522 byte device). Data compression-active.

Table 112. Parity Set selection with devices of the same capacity

Number of devices of same capacity	Number of parity sets formed	Number of devices in each parity set	Number of parity units (each parity set)
0-3	0	0	0
4-7	1	4-7	4
8-10	1	8-10	8
11	2	7/4	4/4
12-15	2	8/4-7	8/4
16-17	2	8/8-9	8/8
18-19	2	10/8-9	8/8
20	2	10/10	8/8

When DASD of different capacities are controlled by a HA Controller, the DASD are grouped into the largest possible parity set for each capacity.

**Device placement for Parity Sets:** All devices in a parity set must be controlled by a single HA Controller IOP.

You should place devices in the Disk Expansion Units sequentially from K01 to K16. This provides the best distribution of devices.

See the Device addressing figure for each system unit or expansion unit.

**Parity Set Restrictions on Devices:** The High Availability Controllers (HA) require the parity set devices to be in a 522 byte format. This may require you to reformat drives after migrating from a location controlled by an older MFIOP.

*522 byte DASD formatting with DASD HA Controller:* A 522 byte DASD format occurs either:

- when the DASD device is added to an ASP, or
- when parity protection is started to the parity set containing the DASD device, or
- when you use a disk copy utility to restore data to a DASD device.

**Mixed device formats:** Beginning with V3R6 level of OS/400, the HA controllers support mixed 520 and 522 byte devices. However, 520 byte devices:

- cannot be part of a parity set, and
- do not use the IOP controller write cache

## Considerations for Performance Optimization

See “SPD Bus IOP Rules — High Workload IOPs” on page 308.

## LAN Subsystems

Table 113. Supported LAN subsystems

Card Type	Description	Comments
2617 (SPD), 6181 (SPD), 2723 (PCI)	Ethernet Network / HP**	Supports: <ul style="list-style-type: none"> <li>• IEEE 802.3 (MAC)</li> <li>• IEEE 802.2 (LLC)</li> </ul>
2618 (SPD)	Fiber Distribution Data Interface	Connects to FDDI Optical Fiber ring. Supports: <ul style="list-style-type: none"> <li>• X3T9.5 (MAC)</li> <li>• ISO 9314 (SMT)</li> <li>• IEEE 802.2 (LLC)</li> </ul>
2619 (SPD), 6149 (SPD), 2724 (PCI)	16/4Mbps Token Ring / HP	Connects to Token Ring. Supports: <ul style="list-style-type: none"> <li>• IEEE 802.5 (MAC)</li> <li>• IEEE 802.2 (LLC)</li> </ul>
2626 (SPD)	16/4Mbps Token Ring / A	Connects to Token Ring. Supports: <ul style="list-style-type: none"> <li>• IEEE 802.5 (MAC)</li> <li>• IEEE 802.2 (LLC)</li> </ul>
2665 (SPD)	Shielded Twisted-Pair Distributed Data Interface	Connects to FDDI (wired) ring using IBM CS type 1, 2, 6 or 9 twisted pair wiring. Supports: <ul style="list-style-type: none"> <li>• X3T9.5 (MAC)</li> <li>• ISO 9314 (SMT)</li> <li>• IEEE 802.2 (LLC)</li> </ul>
2668 (SPD)	Wireless LAN	Includes: <ul style="list-style-type: none"> <li>• 2663 - I/O Attachment Processor</li> <li>• Antenna: <ul style="list-style-type: none"> <li>– 9890 - 360° pattern (Omni)</li> <li>– 9891 - 180° pattern (Hemi)</li> <li>– 9892 - 90° pattern (directional)</li> </ul> </li> <li>• Antenna cable: <ul style="list-style-type: none"> <li>– 9814 - 20 ft</li> <li>– 9815 - 50 ft</li> </ul> </li> </ul>
2810 (SPD)	LAN/WAN IOP	Supports attachments of the following PCI adaptors: <ul style="list-style-type: none"> <li>• FC 2811</li> <li>• FC 2812</li> <li>• FC 2815</li> <li>• FC 2816</li> <li>• FC 2818</li> <li>• FC 2819</li> <li>• FC 2838</li> </ul>
2811 (PCI)	25Mbps UTP ATM	Uses unshielded twisted pair (UTP) to attach an asynchronous transmission mode (ATM) network.  Recomended for less than 100 meters (325ft).
2812 (PCI)	45Mbps Coax T3/DS3 ATM	Uses T3/DS3 interface.  Recomended for less than 137 meters (450ft).

Table 113. Supported LAN subsystems (continued)

Card Type	Description	Comments
2815 (PCI)	155Mbps UTP OC3 ATM	Uses UTP-5 interface.  Recommended for less than 137 meters (450ft).
2816 (PCI)	155Mbps MMF ATM	Uses Multi Mode Fiber (MMF) 62.5 micron interface.  Recommended for less than 2 km (6500ft).
2818 (PCI)	155Mbps SMF OC3 ATM	Uses single mode fiber (SMF) 9 micron interface.  Recommended for less than 40 km (25mi).
2819 (PCI)	34Mbps Coax E3 ATM	Uses E3 interface.  Recommended for less than 137 meters (450ft).
2838 (PCI)	100/10Mbps Ethernet	Allows attachment to standardized 100Mbps Ethernet LANs as well as existing 10Mbps Ethernet LANs.
2850/285A (PCI — Integrated Netfinity Serv)	Integrated Netfinity Server for PCI backplanes	Allows for attachment 2723, 2724, 2838 through Integrated Netfinity Server function.
Features: 2851 2854 2857 2866 (all PCI)	Integrated Netfinity Server (PCI - backplanes)	<ul style="list-style-type: none"> <li>Consists of 2850 processor card with 285A bridge card</li> <li>Supports up to two LAN IOAs: <ul style="list-style-type: none"> <li>(all 285x FC)...FC 2723 - PCI Ethernet</li> <li>(all 285x FC)...FC 2724 - PCI 16/4Mbps Token-Ring</li> <li>(2854, 2857)...FC 2838 - 100/10Mbps Ethernet</li> </ul> </li> <li>IOA combinations can include only one FC 2838.</li> <li>Supports Internal IOP DIMM memory expansions up to 512Mb, in any combination. <ul style="list-style-type: none"> <li>FC 2861 - 32 Mb</li> <li>FC 2862 - 128 Mb</li> <li>FC 2867 - 256 Mb (2866 only)</li> </ul> </li> <li>Uses dedicated slots (varies by Model and backplane type).</li> <li>Consult Model diagrams - PCI Controller card is required on most PCI backplanes.</li> <li>If the customer is running an NT operating system on this Integrated Netfinity Server: <ul style="list-style-type: none"> <li>devices attach (video, keyboard, mouse)</li> <li>FC 0325 Integrated Netfinity Server extension cable for NT is required.</li> <li>Minimum of 64Mb IOP memory is required.</li> </ul> </li> <li>If the customer is running an OS/2 operating system on Integrated Netfinity Server: <ul style="list-style-type: none"> <li>FC 0325 and FC 1700 and display are not allowed.</li> </ul> </li> </ul>

Table 113. Supported LAN subsystems (continued)

Card Type	Description	Comments
6516- 6529 (SPD)	Integrated Netfinity File Server IOP	<ul style="list-style-type: none"> <li>Feature occupies two card slots</li> <li>Supported Features: <ul style="list-style-type: none"> <li>6516 - 16MB 1 LAN port</li> <li>6517 - 32MB 1 LAN port</li> <li>6518 - 48MB 1 LAN port</li> <li>6519 - 64MB 1 LAN port</li> <li>6526 - 16MB 2 LAN ports</li> <li>6527 - 32MB 2 LAN ports</li> <li>6528 - 48MB 2 LAN ports</li> <li>6529 - 64MB 2 LAN ports</li> </ul> </li> </ul>
6616 (SPD)	Integrated Netfinity Server (Pentium**)	<ul style="list-style-type: none"> <li>Supports up to two LAN IOAs <ul style="list-style-type: none"> <li>FC 6149 - Token ring</li> <li>FC 6181 - Ethernet (IEEE/802.3)</li> </ul> </li> <li>Supports Internal IOP DIMM memory expansions up to 256 Mb, in any combination. <ul style="list-style-type: none"> <li>FC 2861 - 32 Mb</li> <li>FC 2862 - 128 Mb</li> </ul> </li> <li>Requires two consecutive SPD Bus slots</li> </ul>
6617 (SPD) 6618 (SPD)	Integrated Netfinity Server (Pentium Pro**)	<ul style="list-style-type: none"> <li>Supports up to three LAN IOAs <ul style="list-style-type: none"> <li>FC 2723 - PCI Ethernet</li> <li>FC 2724 - PCI 16/4Mbps Token-Ring</li> <li>FC 2838 - 100/10Mbps Ethernet</li> </ul> </li> <li>Supports Internal IOP DIMM memory expansions up to 4 DIMMs, in any combination. (512MB max for 6617, 1026MB max for 6618) <ul style="list-style-type: none"> <li>FC 2861 - 32 Mb</li> <li>FC 2862 - 128 Mb</li> <li>FC 2867 - 256 Mb (6618 only)</li> </ul> </li> <li>Requires three consecutive SPD Bus slots</li> <li>If the customer is running an NT operating system on 6617: <ul style="list-style-type: none"> <li>FC 0325 IPCS extension cable for NT is required.</li> <li>Minimum of 64Mb IOP memory is required.</li> <li>All three PCI slots can be used for Integrated Netfinity Server functions.</li> <li>Two of the three PCI slots can support native AS/400 functions, with a maximum of one FC 2838 in these two slots.</li> <li>There is a maximum of two FC 2838s in all three slots.</li> </ul> </li> <li>If the customer is running an OS/2 operating system on 6617: <ul style="list-style-type: none"> <li>FC 0325 and FC 1700 with display are not allowed.</li> <li>Only two PCI slots can be used for Integrated Netfinity Server functions.</li> <li>Both slots can support native AS/400 functions.</li> <li>There is a maximum of one FC 2838.</li> </ul> </li> </ul>

## LAN Subsystem Rules

- The system operator should distribute LAN subsystems evenly across the available buses, where possible.
- See “SPD Bus IOP Rules — High Workload IOPs” on page 308.

## Integrated Netfinity Server Notes

### FC 6516 – FC 6529 File Server IOPs

- Each FSIOP requires two SPD standard card slots (the adapter side counts as an open slot).
- Each FSIOP LAN port has three connector types. Connect according to the customer selected LAN type:
  - A - Ethernet (15 pin D-shell)
  - B - Unshielded Twisted Pair (8 pin RJ45)
  - C - Token Ring (9 pin D-shell)

See *Installation and Upgrade A060*.

- You can upgrade FSIOP by:
  - adding or removing 16 MB feature SIMMs (6509 card type) to or from the 6506 IOP card
  - changing the IOA type:
    - 6520 - two port LAN IOA
- Upgrading the FSIOP requires you to disassemble the FSIOP adapter. You must find a proper work area before working on the FSIOP because the assembly contains small mechanical and electrostatic sensitive parts.

### FC 6616 Integrated Netfinity Server — Pentium

- Each FC 6616 IOP requires two standard SPD card slots.
- Each FC 6616 can support two of the following LAN IOAs in any combination:
  - FC 6149 — Token Ring LAN (16/4 Mbps)
  - FC 6181 — Ethernet (IEEE/802.3)
- You can upgrade an FC 6616 by adding or removing feature DIMMs to expand PC Server memory.

**Note:** You can access the DIMMs by removing an access panel on the FC 6616.

**Note:** Upgrading the FC 6616 requires you to remove the assembly from the system. Find an appropriate work area to handle electrostatic sensitive parts.

- FC 2861 — 32 Mb expansion DIMM
- FC 2862 — 128 Mb expansion DIMM

### FC 6617 - FC 6618 Integrated Netfinity Server — Pentium Pro

- Each FC 6617/6618 IOP requires three consecutive standard SPD card slots.
- Each FC 6617/6618 can support three of the following LAN IOAs in any combination:
  - FC 2723 - PCI Ethernet
  - FC 2724 - PCI 16/4Mbps Token-Ring
  - FC 2838 - 100/10Mbps Ethernet
  - If the customer is running an NT operating system on 6617:

- FC 0325 Integrated Netfinity Server extension cable for NT is required.
- Minimum of 64Mb IOP memory is required.
- You can use all three PCI slots for Integrated Netfinity Server functions.
- Two of the three PCI slots can support native AS/400 functions, with a maximum of one FC 2838 in these two slots.
- There is a maximum of two FC 2838s in all three slots.
- If the customer is running an OS/2 operating system on 6617:
  - FC 0325 and FC 1700 and display are not allowed.
  - You can use only two PCI slots for Integrated Netfinity Server functions.
  - Both slots can support native AS/400 functions.
  - There is a maximum of one FC 2838.
- You can upgrade a FC 6617/6618 by:
  - adding or removing IOAs.
  - adding or removing feature DIMMs to expand PC Server memory.
    - FC 2861 — 32 Mb expansion DIMM
    - FC 2862 — 128 Mb expansion DIMM
    - FC 2867 — 256 Mb expansion DIMM (6618 only)
  - DIMMs and IOAs are accessed by opening the FC 6617/6618.
  - Upgrading the FC 6617/6618 requires you to remove the assembly from the system. Find an appropriate work area to handle electrostatic sensitive parts.

### Integrated Netfinity Server Feature Notes

The 285x features provide Integrated Netfinity Server function in the PCI backplanes.

*Table 114. PCI Integrated Netfinity Server Features.* PCI Integrated Netfinity Server Features use processor CCIN.2850–xxx, where xxx identifies the type. Integrated Netfinity Server Bridge cards use CCIN.285A-yyy, where yyy identifies the bridge type.

Integrated Netfinity Server Feature	System Model	CCIN Processor Bridge	Description
FC 6618	620/S20/720 640/S30/730 650/S40/740	6617-012	PII 333 MHz Integrated Netfinity Server IOP (SPD)
FC 2866	170	2850-012 285A-003	PII 333 MHz Integrated Netfinity Server (Proc) Bridge card
FC 2865	600/S10, 620/S20/720	2850-012 285A-003	PII 333 MHz Integrated Netfinity Server (Proc) Bridge card
FC 2868	150	2850-012 285A-003	PII 333 MHz Integrated Netfinity Server (Proc) Bridge card
FC 2857	170	2850-011 285A-003	P6 200 MHz Integrated Netfinity Server (Proc) video/Bridge card
FC 2854	600/S10, 620/S20/720	2850-011 285A-003	P6 200 MHz Integrated Netfinity Server (Proc) video/Bridge card
FC 2852	150	2850-011 285A-003	P6 200 MHz Integrated Netfinity Server (Proc) video/Bridge card
FC 2851	600/S10, 620/S20/720	2850-002 285A-001	P5 166 MHz Integrated Netfinity Server (Proc) Non-video Bridge card
FC 2850	150	2850-001 285A-001	P5 133 MHz Integrated Netfinity Server (Proc) Non-video Bridge card

- Each FC 285x consists of two cards, a 2850 processor card and a 285A bridge card.
- the PCI Integrated Netfinity Server requires reserved slots on the PCI backplanes. In some positions, a PCI Controller card may also be required.
- 

*Table 115. PCI Integrated Netfinity Server — Allowed IOAs*

Integrated Netfinity Server Feature	Models	IOAs (Number allowed)
2851	6xx/Sxx	2723 (0-2) 2724 (0-2) (Maximum of two total)
2854 (Pentium Pro**)	6xx/Sxx	2723 (0-2) 2724 (0-2) 2838 (0-1) (Maximum of two total)
2857 (Pentium Pro**)	170	2723 (0-2) 2724 (0-2) 2838 (0-1) (Maximum of two total)

- PCI Integrated Netfinity Server features support the following LAN cards:
  - FC 2723 - PCI Ethernet
  - FC 2724 - PCI 16/4Mbps Token-Ring
  - FC 2838 - 100/10Mbps Ethernet
  - At least one IOA is required.
- 
- If the customer is running an NT operating system on PCI Integrated Netfinity Server:
  - FC 0325 Integrated Netfinity Server extension cable for NT is required.
  - Keyboard, printer and Mouse attach to break-out cable.
  - Minimum of 64MB Integrated Netfinity Server memory is required.
  - Two slots can be IOAs used for Integrated Netfinity Server.
- If the customer is running an OS/2 operating system on PCI Integrated Netfinity Server:
  - FC 0325 and FC 1700 and display are not allowed.
  - Only two PCI slots can be used for Integrated Netfinity Server functions.
  - Both slots can support native AS/400 functions.
  - There is a maximum of one FC 2838.
- You can upgrade PCI Integrated Netfinity Server features by:
  - adding or removing IOAs.
  - adding or removing feature DIMMs to expand Integrated Netfinity Server memory.
    - FC 2861 — 32 Mb expansion DIMM
    - FC 2862 — 128 Mb expansion DIMM
    - Install DIMMs in first open slot by beginning with nearest slot to PCI backplane.

- Upgrading the FC 285x may require you to remove the assembly from the system. Find an appropriate work area to handle electrostatic sensitive parts.

## Communications Controllers

Table 116. Communication Controllers

Card Type	Description	Comments
2623 SPD IOP	Six Line Controller	For IOA information, see Table 117 on page 358.
2666 SPD IOP	High Speed Communications / Frame Relay Adapter	Cable type determines interface type, see Table 7 on page 173.
2629 SPD IOP	LAN/WAN/Workstation IOP	<ul style="list-style-type: none"> <li>• Supports up to three IOAs, see table for this IOP.</li> <li>• Maximum of 7 IOPs per I/O Expansion Tower FC 5070 or FC 5072.</li> <li>• Not allowed in slot 13 of I/O Expansion Towers FC 5072 or FC 5070.</li> </ul>
2809 / 2824 PCI IOA Controller	PCI IOA Controller	<ul style="list-style-type: none"> <li>• Required for PCI I/O Adapters in most PCI backplanes</li> <li>• Placed in IOA Bus Controller slots of PCI backplanes on Models 170, 250, 600, S10, 620, S20</li> <li>• Placed in IOA Bus Controller IOP slots of FC 5065 PCI Expansion Tower</li> </ul>

### Communications Controllers — SPD IOP Placement

- Two line communications IOA is counted as two comm lines.
- Install communications IOPs in feature IOP slots where available.
- MFIOPI: See “MFIOPI Comm IOAs” on page 331.

### Communications I/O Adapters

Table 117. Communications IOAs Supported by SPD IOP Type

Adapter Card Type	Controller IOP Type	Description
2605	2623	ISDN Basic Rate Interface
2609	2623	EIA 232/V.24 Two-line adapter
2610	2623	X.21 Two-line adapter
2612	2623	EIA 232/V.24 One-line adapter
2613	2623	V.35 One-line adapter
2614	2623	X.21 One-line adapter
2654	2623	EIA 232/V.24 Two-line adapter + 20ft(6m) enhanced ('E') cable
2655	2623	EIA 232/V.24 Two-line adapter + 20ft(6m) cable
2656	2623	X.21 Two-line adapter + 20ft(6m) cable
2657	2623	EIA 232/V.24 Two-line adapter + 50ft(15.2m) 'E' cable
2658	2623	EIA 232/V.24 Two-line adapter + 50ft(15.2m) cable
2659	2623	X.21 Two-line adapter + 50ft(15.2m) cable

Table 117. Communications IOAs Supported by SPD IOP Type (continued)

Adapter Card Type	Controller IOP Type	Description
2699	2629, 975x	Two-port Multi-protocol IOA. Interface protocol selected by cable CIN: <ul style="list-style-type: none"> <li>• V.24: 0330, 0331, 0332, 0333, 0334</li> <li>• V.35: 0338, 0339, 0340</li> <li>• V.36: 0335, 0336, 0337</li> <li>• X.21: 0341, 0342</li> </ul>
6153	2623	V.35 One-line adapter + 20ft(6m) cable
6173	2623	V.35 One-line adapter + 50ft(15.2m) cable
9699	9751, 9754	Base Multiple Comm adapter (used for ECS and PC Console functions) (see IOA type 2699)

Table 118. Communications IOAs Supported by PCI IOA Type

PCI Adapter Card Type	Description
2720	PCI WAN/ Twinaxial IOA. Includes one EIA-232/V.24 cable, or one of the following can be used. Interface protocol selected by cable CIN: <ul style="list-style-type: none"> <li>• V.24: 0348, 0349, 0350, 0351, 0352</li> <li>• V.35: 0353, 0354, 0355</li> <li>• V.36: 0356, 0357, 0358</li> <li>• X.21: 0359, 0360</li> <li>• Base IOAs include 20 ft EIA-232/V.24 cable for Base ECS</li> <li>• Supports Twinax line, see workstation tables.</li> </ul>
2721, 2745	PCI Two Line WAN IOA. Interface protocol selected by cable CIN: <ul style="list-style-type: none"> <li>• V.24: 0348, 0349, 0350, 0351, 0352</li> <li>• V.35: 0353, 0354, 0355</li> <li>• V.36: 0356, 0357, 0358</li> <li>• X.21: 0359, 0360</li> <li>• Base IOAs include 20 ft EIA-232/V.24 cable for Base ECS</li> </ul>
2750	ISDN BRI-U <ul style="list-style-type: none"> <li>• Requires FC 2824</li> <li>• 4 port / 8 channel (each port is '2B + D' configuration)</li> </ul>
2751	ISDN BRI-S/T <ul style="list-style-type: none"> <li>• Requires FC 2824</li> <li>• 4 port / 8 channel (each port is '2B + D' configuration)</li> </ul>
2761	Analog Modem <ul style="list-style-type: none"> <li>• Requires FC 2824</li> <li>• 8 ports</li> </ul>

## FC 2623 Configuration Rules

### FC 2623 IOAs:

Table 119. FC 2623 Six line controller Communications IOAs, by interface type.

V.36	EIA-232/ V.24	V.35	X.21	ISDN
	2612	2613	2614	2605

Table 119. FC 2623 Six line controller Communications IOAs, by interface type. (continued)

V.36	EIA-232/ V.24	V.35	X.21	ISDN
	2609	6153	2610	
	2654	6173	2656	
	2655		2659	
	2657			
	2658			

**FC 2623 IOP — IOA combining rules:** A FC 2623 Communications Controller supports the following combinations:

1. Up to two ISDN adapters (FC 2605), with no other IOA types.
2. Up to three communications IOAs in any combination selected from Table 119 on page 359, subject to the V.35 restrictions below.
3. V.35 SDLC restrictions in T1/E1/J1 line configurations
  - No other IOA protocol types are allowed when running V.35 in T1/E1/J1 line configurations.
  - When maximum line speed is 640 Kbps, only one V.35 IOA is allowed, with no other IOAs.
  - When maximum line speed is 512 Kbps, only two V.35 IOAs are allowed, with no other IOAs.
  - When maximum line speed is 384 Kbps or less, up to three V.35 IOAs are allowed, with no other IOA types.

## FC 2629 Configuration Rules

**FC 2629 IOAs:**

Table 120. FC 2629 LAN/WAN/Workstation controller IOAs, by interface type.

LAN	Communications	Twinax Workstation
6181	2699	6180
6149		

**FC 2629 IOP — IOA combining rules:** A FC 2629 LAN/WAN/Workstation Controller supports the following combinations:

1. Three or less of any combination of Comm or Workstation IOAs.
2. Up to two LAN IOAs with up to one Comm or Workstation IOA.
3. One LAN IOA and up to two Comm or Workstation IOAs.

## Workstation Controllers

Table 121. Workstation I/O Controllers and Adapters

Card Type	Description	Comments
2720 PCI IOA	PCI WAN/ Twinax Workstation I/O Adapter	<ul style="list-style-type: none"> <li>• Connects 28 Twinaxial devices</li> <li>• Includes cable with 4 port expansion box, 7 active devices (maximum) attached to each port</li> <li>• Supports 1 communication line (see Comm adapters)</li> </ul>

Table 121. Workstation I/O Controllers and Adapters (continued)

Card Type	Description	Comments
2722 / 2746 PCI IOA	PCI Twinax Workstation I/O Adapter	<ul style="list-style-type: none"> <li>connects up to 56 twinax devices, with a maximum of 40 devices active simultaneously</li> <li>Includes cable with 8 port expansion box, up to seven devices can be connected to each port</li> </ul>
6050 SPD IOP	Enhanced Twinaxial Workstation Controller	<ul style="list-style-type: none"> <li>Supports Twinaxial (5250) type terminals and printers</li> <li>connects up to 40 units for AS/400 Advanced Systems</li> <li>connects up to 7 units for AS/400 Advanced Servers</li> </ul>
6141 SPD IOP	ASCII Workstation Controller	<ul style="list-style-type: none"> <li>Connects up to 6 ASCII terminals</li> <li>Connects up to 18 ASCII units with FC 6142 Attachment</li> </ul>
6142 SPD IOP	ASCII Workstation Attachment	<ul style="list-style-type: none"> <li>12 port Attachment for FC 6141 IOP</li> <li>Not Allowed on Server models, Sxx</li> </ul>
6180 SPD IOA	Twinaxial Workstation Controller IOA	<ul style="list-style-type: none"> <li>Connects up to 40 Twinax devices on Models 620, 640, 650</li> <li>Connects up to 7 Twinax devices on Server Models Sxx</li> <li>Installs in Slot C of MFIOP (FC 9751/FC 9754) on Models 640, 650, S30, S40, SB1</li> <li>Installs in FC 2629, when not installed in MFIOP.</li> </ul>

## Specialized I/O Processors

Table 122. Specialized I/O Processors

Card Type	Description	Comments
2620 2628	Cryptographic IOP (SPD)	<ul style="list-style-type: none"> <li>The encryption key is erased if the card is unplugged.</li> <li>It is the customer's responsibility to retain and enter the encryption key.</li> </ul>
4800	Cryptographic IOP (PCI)	<ul style="list-style-type: none"> <li>IBM 4758 technology</li> <li>Requires 1 high speed PCI slot and FC 2824</li> </ul>
2664	Integrated Facsimile Adapter (SPD)	Includes two country unique attachment couplers and two country unique telephone cables.

### Encryption IOP Placement

- Install to minimize future movement of Cryptographic IOPs.
- Do not install in the last slot of a bus or system expansion (bus may be extended in the future).

### Integrated Facsimile Adapter Placement

- Same rules as Communications IOPs.

---

## Supported Rack Configurations

The following rack configurations are supported on the 9404/9406 Model 6xx/Sxx systems:

- 9309 #9171 - SPCN General Purpose I/O Rack
- 9309 #9141 - General Purpose Expansion Rack
  - This rack must be connected to a 9309 #9171 or a FC 5044 System Unit Expansion Rack.
  - The #9141 can be attached directly to system units for the purpose of housing external tape and diskettes if wrap connector P/N 93X0167 is installed.

## Rack Diagrams

Ordering, installation procedures, and instructions have been developed based on the rack configurations shown in the following pages.

In these rack diagrams:

- Each feature or machine type shown occupies the full width of the rack, except for the 3490-E11, and 3590-B11.
  - Up to two 3490-E11, 3590-B11, or 9427-211 machine types can be installed side-by-side at one EIA location.
- Rack diagrams are drawn using an additional table showing allowed devices. Use the **Location Symbol** column of the corresponding table to identify a space in a rack.
- A vertical line within the figure means that space can be used in more than one way. Use the **Devices** column of the corresponding table to identify devices that should be configured in that space.

For example, the space EIA 17 to EIA 25 in the #9171 SPCN General Purpose I/O Rack diagram (Figure 108 on page 363), there could be:

- One 9336 or one 9337 or one 9347 or one 9348 or one 5032

or

- One 3570-Bxx

or

- Two 9331s

or

- One or two 3490-E11 tape unit(s)

## FC 9171 and FC 5043 Rack Diagram

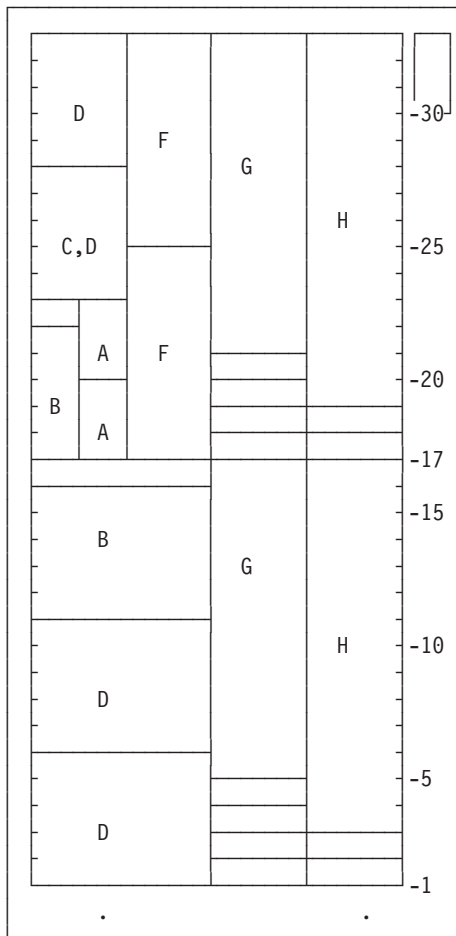


Figure 108. #5043 and #9171 SPCN General Purpose I/O Rack Diagram

Table 123. #9171 Rack Configuration Diagram Key

Location Symbol	EIA Units Required	Devices
A	3	9331 <sup>1</sup>
B	5	9336, 9337, 3570-Bxx <sup>1</sup> , 9347 <sup>1</sup> , 9348 <sup>1</sup> , 5032 <sup>1</sup>
C	5	3570-Bxx, 9347, 9348
D	5	9336, 9337
F	8	3490-E11 <sup>2</sup>
G	12	3590-B11 <sup>2</sup>
H	14	3490-Cxx, 9427-211

### Notes:

<sup>1</sup> Customer access devices should not be installed below a 3490-Cxx or 3590-B11 device.

<sup>2</sup> Up to two 3490-E11, two 3590-B11, or two 9427-211 devices can be installed at the same EIA location.

## FC 9141 Rack Diagram

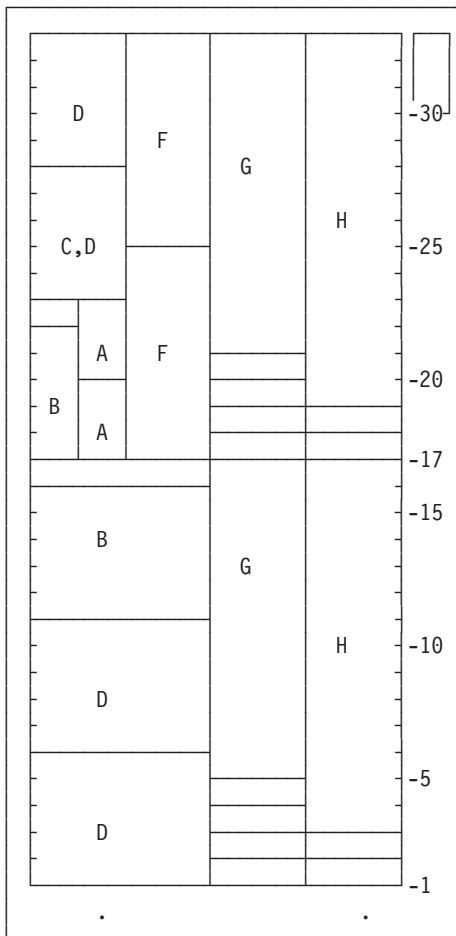


Figure 109. #9141 General Purpose I/O Rack (non-SPCN)

Table 124. #9141 Rack Configuration Diagram Key

Location Symbol	EIA Units Required	Devices
A <sup>1</sup>	3	9331
B <sup>1</sup>	5	3570-Bxx, 9336, 9337, 9347, 9348, 5032
C	5	3570-Bxx, 9347, 9348
D	5	9336, 9337
F	8	3490-E11 <sup>2</sup>
G	12	3590-B11 <sup>2</sup>
H	14	3490-Cxx, 9427-211

### Notes:

<sup>1</sup> Customer access devices should not be installed below a 3490-Cxx or 3590-B11 device.

<sup>2</sup> Up to two 3490-E11, two 3590-B11, or two 9427-211 devices can be installed at the same EIA location.

FC 5044 Rack Diagram

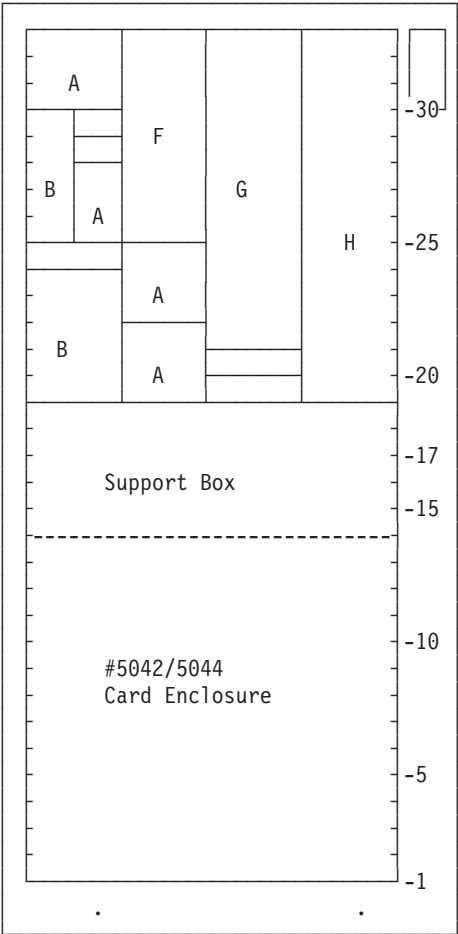


Figure 110. #5044 System Unit Expansion Rack (SUE)

Table 125. #5042/5044 Rack Configuration Diagram Key

Location Symbol	EIA Units Required	Devices
A	3	9331
B	5	3570-Bxx, 9336, 9337, 9347, 9348, 5032
F	8	3490-E11 <sup>1</sup>
G	12	3590-B11 <sup>1</sup>
H	14	3490-Cxx, 9427-211

**Note:**

<sup>1</sup> Up to two 3490-E11, two 3590-B11, or two 9427-211 devices can be installed at the same EIA location.



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This appendix provides an index of information in Chapter 2.

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## Appendix E. Notices

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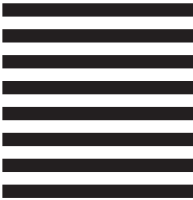
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